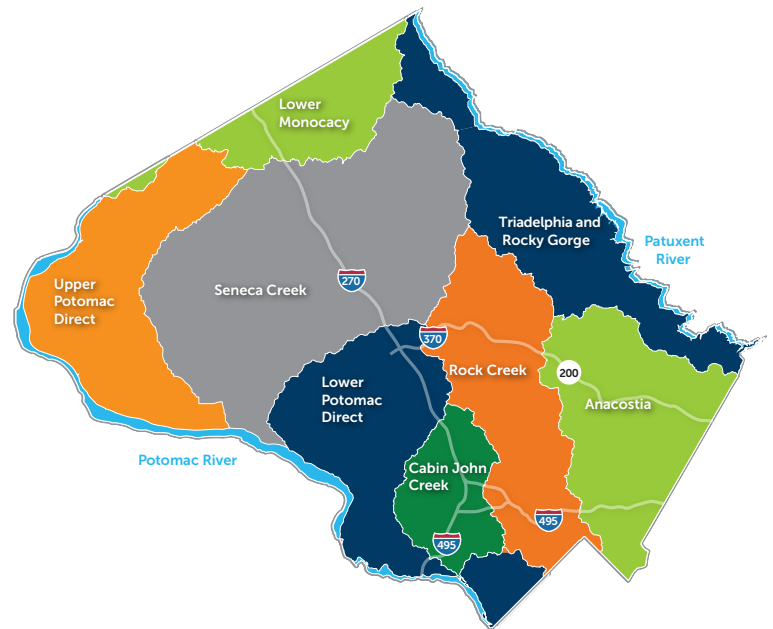




# National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit

## FY20 Annual Report

July 1, 2019 to  
June 30, 2020



*Montgomery County, Maryland*



**DEPARTMENT OF  
ENVIRONMENTAL  
PROTECTION**  
MONTGOMERY COUNTY • MARYLAND

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- C Montgomery County Public Schools Report on Municipal Separate Storm Sewer System Activities, Fiscal Year 2020 (Part III.B.5)
- D U.S. Environmental Protection Agency Municipal Separate Storm Sewer System Inspection Findings and Montgomery County Response
- E Implementing Environmental Site Design Report (Final)  
Environmental Site Design and Zoning Code Analysis, Update March 28, 2012
- F Maryland Department of the Environment STW Triennial Review and Erosion and Sediment Control Delegation Letters
- G Fiscal Year 2020 Water Quality Cases  
Documentation for Commercial and Industrial Surveys

- H Maryland Department of the Environment Notice of Intent Acceptance Letters
- I April 13, 2018 Consent Decree  
October 1, 2019 Revised Final Consent Decree Completion Report  
November 22, 2019 Maryland Department of the Environment Approval of Revised Consent Decree Completion Report  
December 30, 2019 Termination of Consent Decree
- J Detailed Watershed Restoration Project Tables  
Oaks Reforestation Maintenance Documentation
- K Implementation Plan Guidance Document
- L National Pollutant Discharge Elimination System Water Chemistry Monitoring in the Breewood Tributary of Upper Sligo Creek, 2009 through 2019
- M Montgomery County National Pollutant Discharge Elimination System 2003 Annual Municipal Separate Storm Sewer System Report
- N Watershed Screening

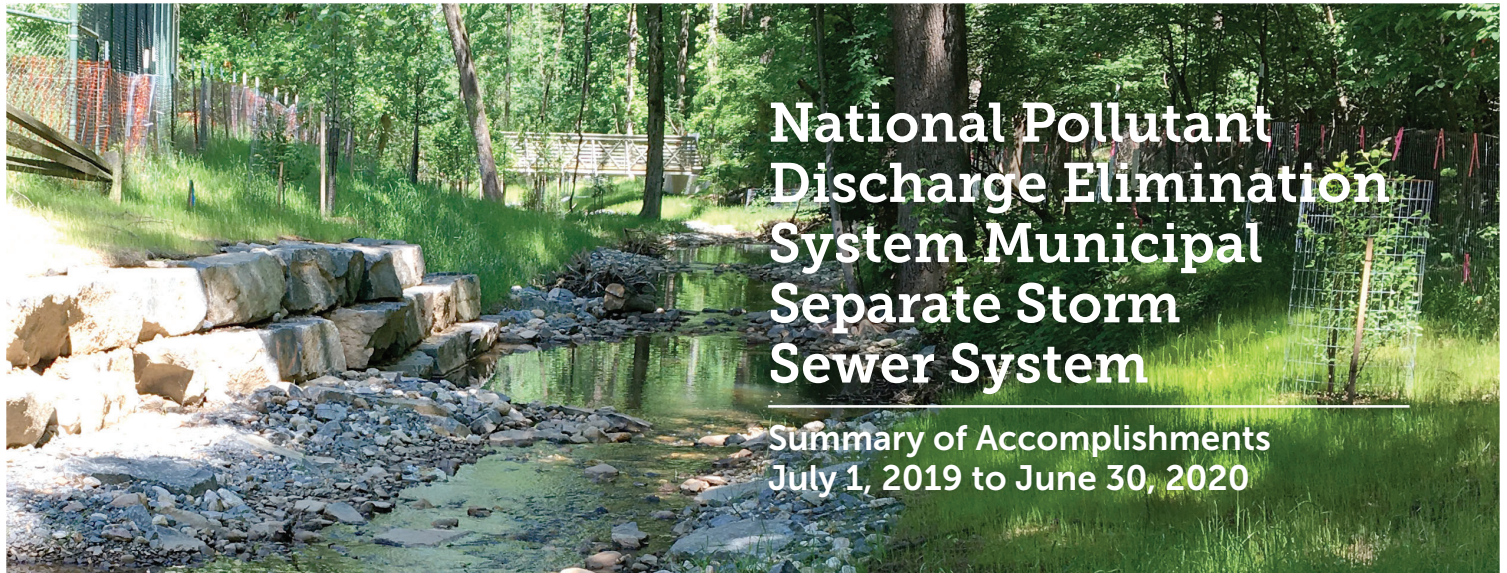
# Acronyms and Abbreviations

$\leq$	less than or equal to
$\geq$	more than or equal to
§	Section
$\mu\text{mho/cm}$	micromhos per centimeter
$^{\circ}\text{C}$	degrees Celsius
$\mu\text{S/cm}$	micro-Siemens per centimeter
ARP	Anacostia River Watershed Restoration Plan and Report
BIBI	benthic index of biological integrity
BMP	best management practice
BOD	biochemical oxygen demand
CAST	Chesapeake Assessment Scenario Tool
CBLP	Chesapeake Bay Landscape Professional
CBP	Chesapeake Bay Program
CBT	Chesapeake Bay Trust
CCIS	County Coordinated Implementation Strategy
CD	consent decree
CFR	Code of Federal Regulation
CIP	capital improvement program
CMAC	continuous monitoring and adaptive control
CMP	Clarksburg Monitoring Partnership
COMAR	Code of Maryland Regulation
COMCOR	Code of Montgomery County Regulation
County	Montgomery County
COVID-19	coronavirus disease 19
CPv	channel protection volume
CY	calendar year
DA	drainage area
DECC	Division of Energy, Climate, and Compliance
DEP	Department of Environmental Protection
DGS	Department of General Services
DHCA	Department of Housing and Community Affairs
DHS	Division of Highway Services
DIY	do-it-yourself
DOT	Department of Transportation
DPS	Department of Permitting Services
DSWS	Division of Solid Waste Services
DTS	Department of Technology Services
EMC	event mean concentration
EOB	executive office building
EPA	U.S. Environmental Protection Agency
EPT	<i>Ephemeroptera</i> (mayflies), <i>Plecoptera</i> (stoneflies), and <i>Trichoptera</i> (caddisflies) taxa
ESC	erosion and sediment control
ESD	environmental site design



FAP	financial assurance plan
FFG	functional feeding groups
FIBI	fish index of biological integrity
FMD	Fleet Management Division
FOG	fats, oils, and grease
FY	fiscal year
General Permit 12-SW	General Permit for Discharges of Stormwater Associated with Industrial Activity
GIS	geographic information system
HEC-RAS	Hydrologic Engineering Center – River Analysis System
HOA	homeowners association
HSAF	hotspot assessment form
I	interstate
IA	impervious area/acreage
IBI	index of biological integrity
ICC	intercounty connector
ICPI	Interlocking Concrete Pavement Institute
ID	identification
IDDE	illicit discharge detection and elimination
IPM	integrated pest management
ISR	impervious surface restoration
ISRP	impervious surface restoration plan
LID	low-impact development
LY	levy year
MC	mean concentration
MC311	Montgomery County Customer Service Center
MC-CBT	Montgomery County Chesapeake Bay Trust
MCPS	Montgomery County Public Schools
MD8DIG	Maryland’s 8-digit watershed
MDA	Maryland Department of Agriculture
MDE	Maryland Department of the Environment
MEP	maximum extent practicable
mg/L	milligrams per liter
MNCPPC	Maryland National Capital Park and Planning Commission
MS4	municipal separate storm sewer system
MWCOG	Metropolitan Washington Council of Governments
N/A	not applicable
NGICP	National Green Infrastructure Certified Professional
NOI	notice of intent
NOV	notice of violation
NPDES	National Pollutant Discharge Elimination System
NR	not reported
NRDC	Natural Resources Defense Council
OCA	Office of the (Montgomery) County Attorney
PCB	polychlorinated biphenyl
Permit	Municipal Separate Storm Sewer System Permit Number 06-DP-3320 MD0068349

PICP	permeable interlocking concrete pavement
PM	preventive maintenance
POI	point of interest
POSWP	public outreach and stewardship work plan
PPE	personal protective equipment
QA/QC	quality assurance/quality control
RCN	runoff curve number
RCP	responsible personnel certification
RRMD	Recycling and Resource Management Division
RFP	request for proposal
ROW	right-of-way
SDE	spatial database engine
SEP	supplemental environmental project
SFR	single-family residence or residential
SHA	Maryland State Highway Authority
SM	standard method
SPA	special protection area
SSO	sanitary sewer overflow
Strategy	Montgomery County Coordinated Implementation Strategy
SWIM	stormwater inspection and maintenance program
SWFMP	stormwater facility maintenance program
SWM	stormwater management
SWPPP	stormwater pollution prevention plan
TKN	total Kjeldahl nitrogen
TMDL	total maximum daily load
TN	total nitrogen
TOC	time of concentration
TP	total phosphorous
TPH	total petroleum hydrocarbon
TSS	total suspended solids
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WIP	watershed implementation plan
WLA	wasteload allocation
WMATA	Washington Metropolitan Area Transit Authority
WMOD	Watershed Management Operations Division
WQPC	water quality protection charge
WQv	water quality volume
WSSC	Washington Sanitary Sewer Commission
WTM	watershed treatment model
WVO	waste vegetable oil
WWTP	wastewater treatment plant



# National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System

Summary of Accomplishments  
July 1, 2019 to June 30, 2020

## STORMWATER – WHAT’S THE PROBLEM?

As the County has become more developed, our natural landscapes have been replaced with asphalt, concrete, buildings, and roadways. Before development, water runoff from rain or snow melt was absorbed naturally into the soil or flowed over the ground to a nearby stream. Development has disrupted this natural water flow cycle.

Now, during rain and snow melt, this “stormwater runoff” flows across paved surfaces and picks up whatever is in its path: oil, litter, pesticides, fertilizer, leaves, animal waste, and more.

This polluted stormwater runoff then flows – often untreated – directly into streams and waterways, reducing water quality and damaging natural habitats.

Instead of filtering into the ground, stormwater runoff can also cause flash flooding and significant erosion, as well as damage to properties and infrastructure, as it flows over land or through storm drains to local streams.

## WHAT’S THE SOLUTION?

Effective stormwater management:

- Improves the **quality** of stormwater runoff, by reducing the pollutants it carries to local waterways.
- Reduces the **quantity** of stormwater, by helping more of it soak into the ground.

**Montgomery County manages multiple programs that assess and address impacts from stormwater and surface water pollution. By implementing a comprehensive stormwater management program, Montgomery County staff and agency partners work to protect and improve water quality in the County’s streams and waterways.**

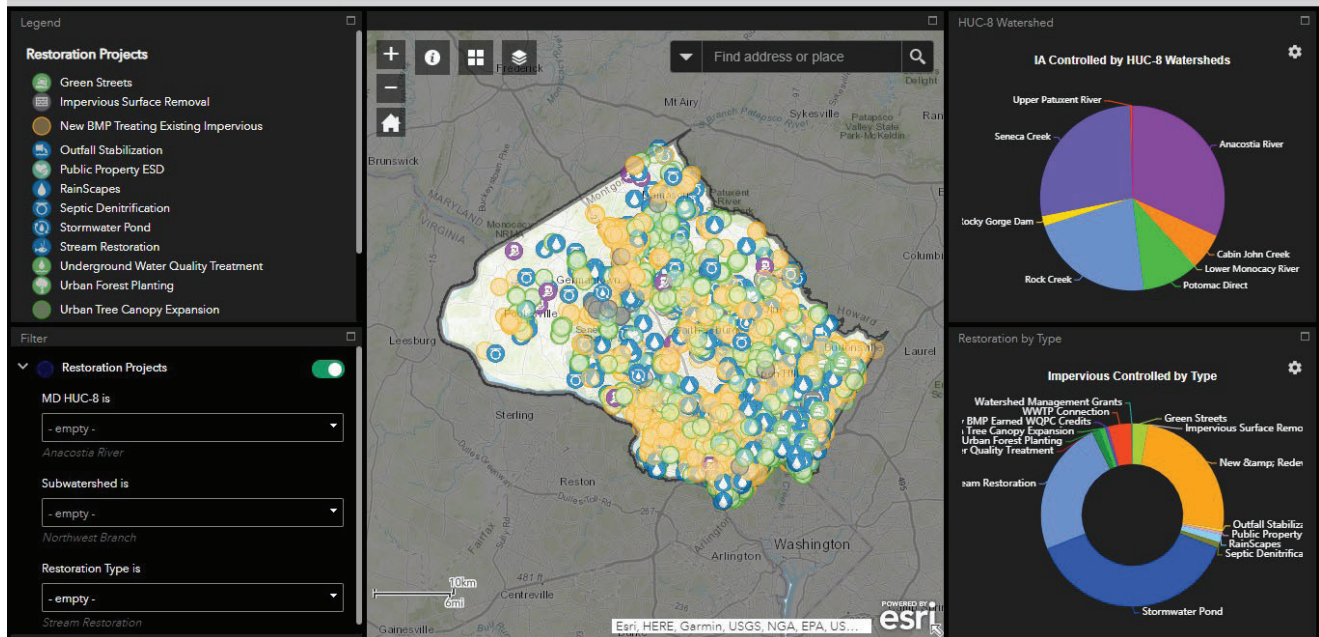
A significant component of the County’s stormwater program is its Municipal Separate Storm Sewer System (MS4) permit, a 5-year permit issued by the Maryland Department of the Environment (MDE).

This Summary of Accomplishments highlights progress the County has made between July 1, 2019 and June 30, 2020. It summarizes the fiscal year 2020 (FY20) Annual Report accomplishments toward meeting the requirements of the MS4 permit, as well as a summary of the continued restoration achievements in FY20.

The County completed restoration of 3,778 acres of impervious surfaces in December 2018, fulfilling the terms of the April 2018 Consent Decree. On November 22, 2019, MDE notified the County that it had met all conditions of the Consent Decree. **In FY20, the County continued to implement restoration projects beyond what was required to meet the original 2010 permit goal.**

**In FY20, the County continued to implement restoration projects beyond what was required to meet the original 2010 permit goal of 3,778 acres.**





Interactive Map of Water Restoration Projects on DEP Website

Watershed restoration work performed in the County is implemented to improve water quality under the guidelines set by MDE issued through an MS4 permit. It is funded primarily through the County's Water Quality Protection Charge (WQPC) – the lynchpin that makes the County's comprehensive stormwater management program one of the best in the nation. To illustrate the County's 2010 MS4 permit restoration efforts, the County developed an interactive map in FY20 for residents to learn more about the County's work to meet the 2010 permit restoration goal. This map is located on the Department of Environmental Protection (DEP) Watershed Restoration home page (<https://montgomerycountymd.gov/water/>).

### Other major accomplishments in protecting the County's streams between July 1, 2019 and June 30, 2020 include the following:

- The County continued to implement the restoration program by completing 15 Capital Improvement Program (CIP) Projects; working with non-profits, watershed groups, and residents to implement more than 300 voluntary grant and rebate-funded projects; and planting more than 2,800 trees.
- In FY20, DEP inspected 8,925 best management practices (BMPs) and ensured the preventive maintenance of 5,198 stormwater management BMPs.
- The Department of Permitting Services (DPS) continued to implement a highly effective erosion and sediment control program by approving stormwater management plans, and ensuring environmental site design is implemented to the maximum extent practicable. In FY20, the County conducted 14,874 erosion and sediment control inspections under this program, resulting in more than 350 enforcement actions.

The **Water Quality Protection Charge (WQPC)** funds Montgomery County's stormwater management programs. The WQPC is assessed based on how much impervious area is on an owner's property, thereby contributing to stormwater runoff. WQPC credits are granted to property owners who install and maintain stormwater facilities on their properties to reduce and/or treat stormwater runoff.



Watkins Meadow Pond Retrofit – After Construction

A **Best Management Practice (BMP)** is a device designed to temporarily store or treat runoff to mitigate flooding, reduce pollution, and provide other amenities. BMPs include structural stormwater management facilities, like ponds, and non-structural practices, like Environmental Site Design (ESD).

- DEP continues to implement a highly effective illicit discharge detection and elimination program that includes public education and outreach, water quality investigations, and illegal dumping investigations. Water quality and illegal dumping complaints are reported through the County's call center for non-emergencies (MC311) or through DEP's website.
- DEP and the Montgomery County Department of Transportation (DOT) continue to coordinate with partners for trash removal programs. In FY20, 15,489 pounds of trash were removed from the Anacostia River Watershed, captured by stormwater management BMPs or cleaned up by volunteers.
- DEP's robust public education and outreach program continued; however, the COVID-19 pandemic prevented in-person events beginning in mid-March 2020. In response, DEP switched its public engagement to online, virtual, and video communications; and significantly increased its social media presence and following on Facebook, Twitter, and Instagram.
- DEP continued to focus on updating its data management procedures to add urban BMPs to the County BMP database, with 742 BMPs added in FY20, for a total of 15,317 active BMPs in the database.

**Environmental Site Design (ESD)** is a design strategy for maintaining pre-development runoff characteristics and protecting natural resources. ESD BMPs integrate site design, natural hydrology, and smaller controls to capture and treat runoff. These practices include micro-bioretenction, rain gardens, permeable pavement, and green roofs.



Briar Acres Maintenance Project – Before Construction

## Management Programs

To control stormwater runoff and reduce pollution, the County implements a diverse set of management programs that target trash and litter reduction, stormwater facility maintenance and inspections, the detection and elimination of illicit discharges, and public outreach and education.

### Stormwater Management Program – Inspection and Maintenance

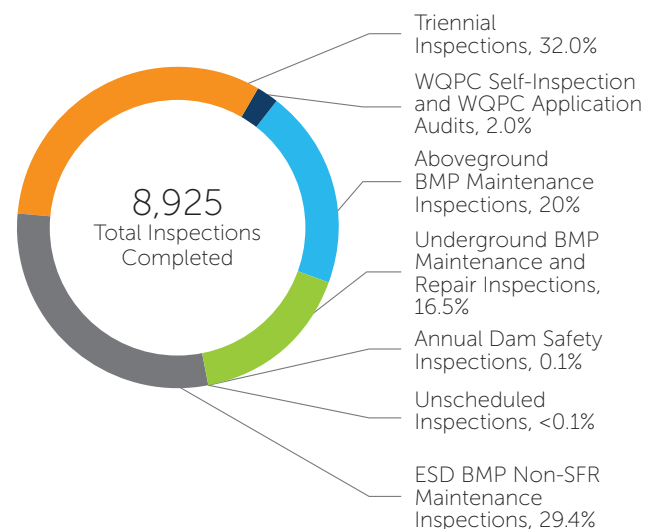
DEP is responsible for the triennial inspection and ensuring preventive maintenance of 15,317 stormwater management facilities under the County's jurisdiction. DEP performs structural maintenance of 5,498 stormwater management facilities, of which more than 2,500 are privately owned and more than 2,900 are owned by the County, the public-school system, and the Maryland National Capital Park and Planning Commission. More than 9,800 facilities are privately owned and maintained. In FY20, DEP conducted 8,925 inspections.

Since 2010, DEP has added more than 10,000 facilities on public and private property, of which the majority are environmental site design (ESD) practices. DEP is also responsible for conducting triennial inspections of these facilities. Following are highlights of the inspection and maintenance program in FY20:

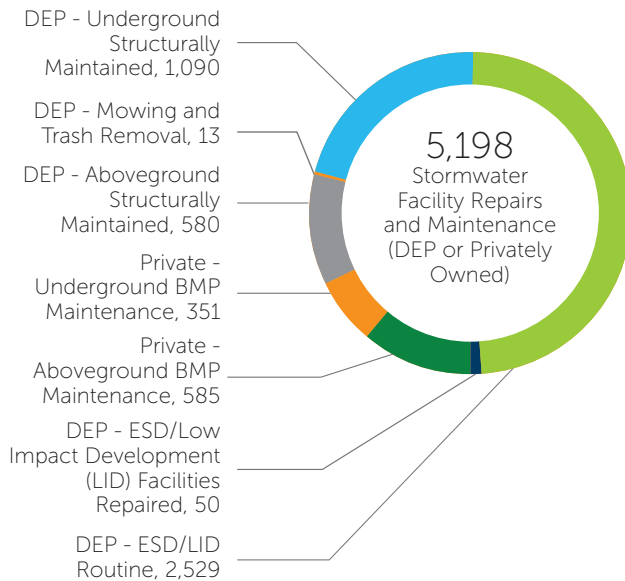
- In FY20, DEP inspected 1,027 ESD BMPs located primarily on non-residential and public property.
- In FY20, DEP hired the second of two new ESD program managers, responsible for maintenance of ESD on publicly owned properties and inspecting more than 6,400 ESD BMPs on private property,



Briar Acres Maintenance Project – After Construction







White Oak Green Street

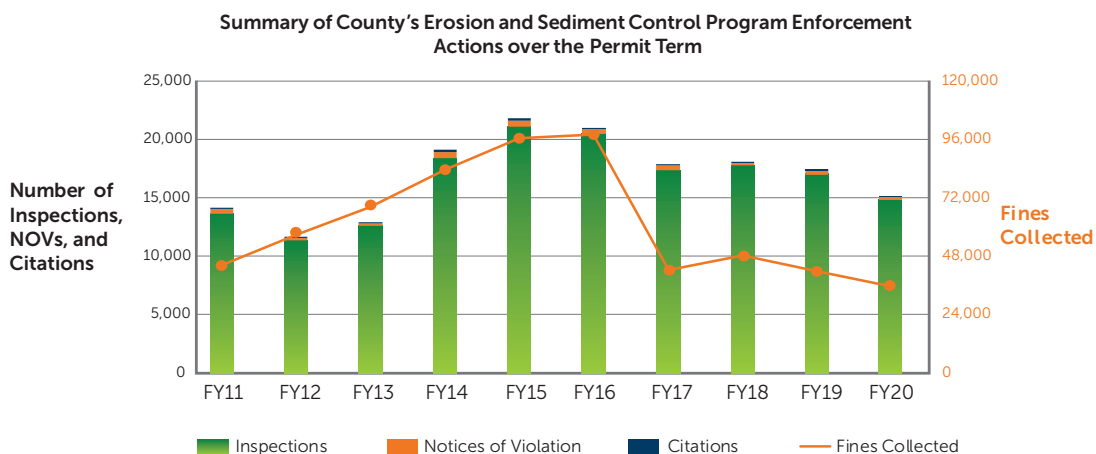
primarily single family residential lots. The program will benefit from the leadership and focused attention of these full-time experienced ESD program managers.

- DEP previously developed and piloted a new online form for self-inspection of residential stormwater management facilities. The form is tied to the WQPC credit. In FY20, 1,425 postcards were sent to property owners with ESD BMPs. Of these, 98 completed the online inspection, resulting in 98 BMPs with approved WQPC credit inspections
- In FY20, DEP continued a multi-faceted outreach and education program promoting the WQPC credit program to achieve more ESD facility inspections on single-family residence properties. The outreach program included postcard mailings, onsite credit application processing, and a series of outreach do-it-yourself ESD maintenance videos for residential property owners.
- An audit effort to verify the maintenance conditions of assets in the WQPC self-inspection program was continued in FY20. The goal was to conduct annual audits of 10 percent of the approved applications for credits granted in the prior Levy Year. For FY20, approved credit applications for FY19 (credited applications) were included (173 applications). Applications were submitted on a property basis and some properties had more than one BMP. Of these, 46 were selected for audit (165 BMPs). Of these, 25 properties were not available for inspection, resulting in audits of 21 properties, an audit rate of 12 percent of total applications.
- DEP conducts other maintenance inspections to ensure that facilities are functioning properly and that preventive maintenance is being conducted as required by the permit. In FY20, DEP staff conducted more than 5,700 unscheduled and maintenance inspections.
- In addition to inspections, the DEP stormwater facility maintenance program oversees structural and non-structural maintenance of all stormwater management facilities under the County's jurisdiction. In FY20, 5,198 facilities were maintained, either by DEP contractors or by the facility owner. All maintenance was performed under the guidance of DEP inspection staff.
- During FY20, DEP renovated several "Green Street" BMPs in the White Oak Community. The new planting approach offers increased pollinator benefit, increased stormwater control, as well as beautification with four seasons of plantings interest. The dense planting will also reduce the open space between plants for decreased weed invasion and maintenance efforts.

## Erosion and Sediment Control

The DPS implements an erosion and sediment control program designed to reduce pollutants during construction of new developments and redevelopment. County staff review permit applications, inspect erosion and sediment control practices, issue notices of violations, and collect fines.

MDE continues to evaluate the County's erosion and sediment control program and found it to comply with the permit. No additional improvements to the program are required.



## Illicit Discharge Detection and Elimination

The County implements an inspection and enforcement program to ensure that anything other than stormwater that discharges to the MS4 is either permitted or eliminated.

**Outfall Screening:** DEP staff investigate all dry-weather discharges (non-stormwater) that are determined by field-testing to be polluted. These "illicit discharges" are then tracked to their sources and eliminated. In FY20, DEP screened 156 outfalls, of which 19 were new outfalls that were previously not mapped in the inventory, and 46 had dry-weather flows.

Of the 46 outfalls with dry-weather flows, 5 had suspicious discharge. Of these, 1 was determined to be naturally occurring and did not require follow up, and 2 observed no further suspicious discharge. Another was traced to a stormwater facility and the issue was referred to the DEP, which scheduled the facility for cleaning. Finally, 1 discharge was traced to a sediment control pond for the Purple Line construction project and was fixed. The remaining 41 outfalls that had dry-weather flow during the initial visit did not exhibit abnormal water chemistry parameters, visual characteristics, odor issues, or unusual vegetative growth and were, therefore, classified as groundwater discharge.

From FY11 to FY20, DEP staff assessed 1,654 outfalls by walking the entire reach of water bodies in four sub-watersheds, capturing most of the existing outfalls in each drainage area. DEP is targeting smaller watersheds with the highest percentages of commercial and industrial areas to identify and eliminate pollutant sources in those areas.



Outfall with Dry-Weather Flow



**Commercial Industrial Surveys:** DEP conducts annual hotspot surveys of properties in different commercial and industrial areas of the County. In FY20, DEP performed 47 hotspot surveys, resulting in the issuance of 11 notices of violation, 1 warning letter, and 5 verbal warnings.

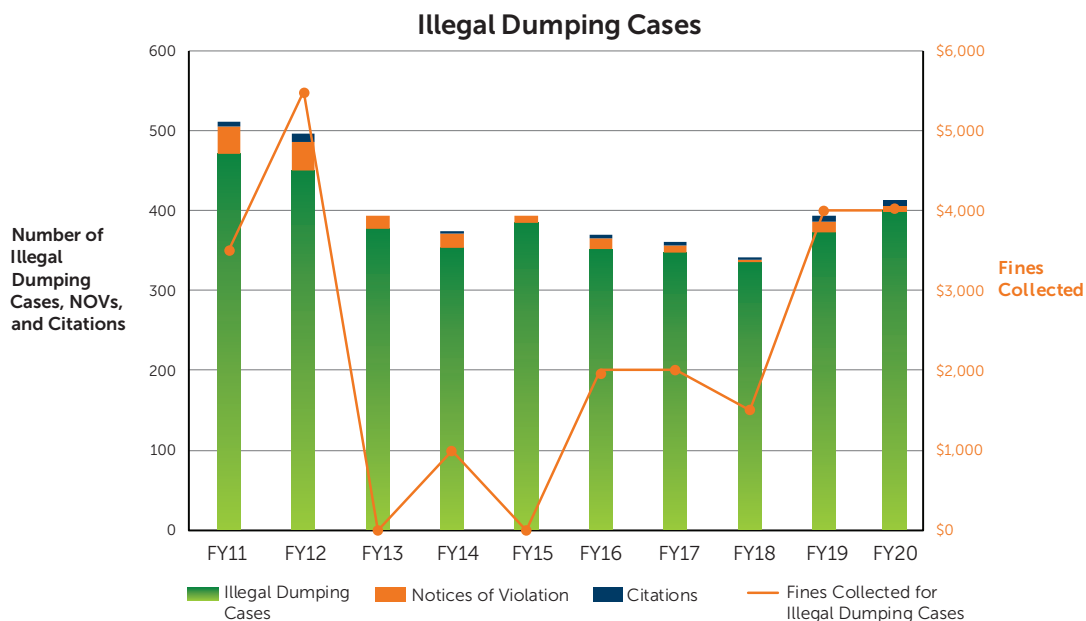
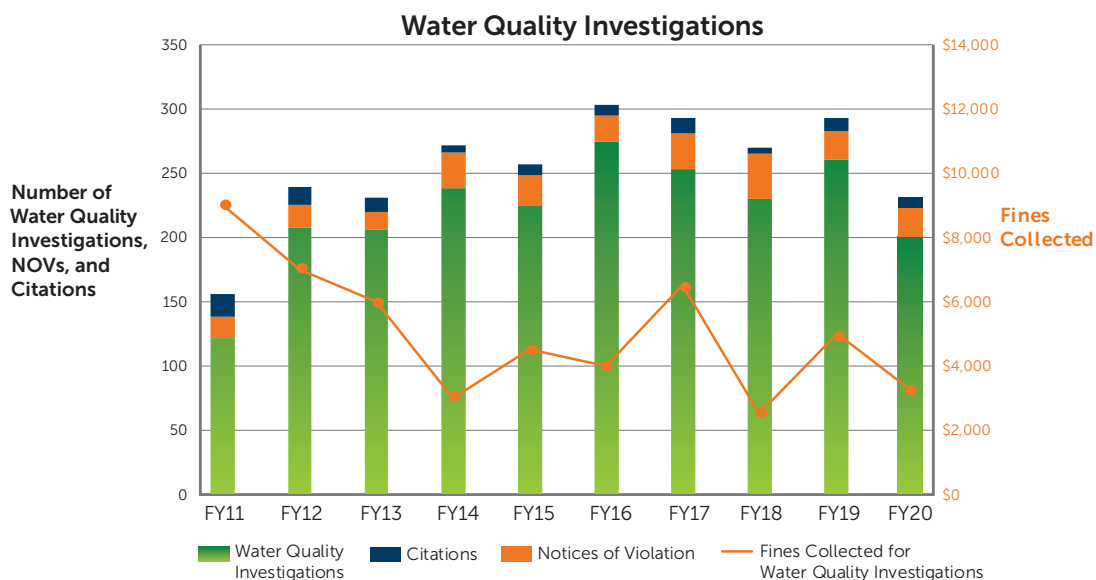
**Enforcement:** DEP implements a highly effective enforcement program that has successfully eliminated discharges reported by the public. Water quality and illegal dumping complaints are reported through the County's call center for non-emergencies (MC311) or through DEP's website (<https://www.montgomerycountymd.gov/DEP/contact/illegal-dumping.html>).

In FY20, the County investigated 199 water quality issues, 126 complaints, 48 sanitary sewer overflows, and 25 hazardous materials-related cases. These investigations resulted in 28 warning letters and 35 formal enforcement actions (8 civil citations totaling \$4,000 and 27 notices of violation).

During FY20, there were 401 complaints concerning illegal dumping of solid waste, resulting in 14 formal enforcement actions (8 civil citations with fines totaling \$4,000 and 6 notices of violation) and numerous warning letters.



Inspection of Grease and Trash at Commercial Property



## Trash and Litter

The County actively participates in multiple programs and partnerships designed to meet the goals of the Potomac River Watershed Trash Treaty and the 2010 Anacostia Total Maximum Daily Load (TMDL). Initiatives directly related to regional campaigns include ongoing education and outreach for recycling and litter reduction, mass media outreach campaigns, and litter removal from streets, stormwater ponds, and transit stops.

In FY20, DEP continued to increase its outreach efforts for the County's Carryout Bag Tax by distributing approximately 50,000 reusable bags to community members. Bags were distributed at events, stocked at every County public library, and distributed through the County's partnership with Manna Foods.

Due to the COVID-19 pandemic in 2020, DEP staff increased outreach and education to residents about community spread and cleaning their reusable bags. A public service announcement and educational outreach materials about how to keep reusable bags clean were promoted through social media outlets and on the DEP website.

Also, as a result of the pandemic, DEP discovered that people were dropping personal protection equipment (PPE) such as masks and gloves as litter. DEP responded with educational posts on social media outlets, including two videos, one in English and another in Spanish, about how to dispose of PPE properly.

In FY20, the County continued to focus on trash removal in the Anacostia Watershed. DEP is actively installing and retrofitting BMPs that collect trash, which DEP then removes. DEP also sponsors volunteer cleanups. Together, these efforts removed 15,489 pounds of trash from the Anacostia River Watershed in FY20.

In FY20 the County's grant program issued a Request for Proposal for installation of a trash trap in the Anacostia River Watershed. The grant was awarded to the Anacostia Riverkeeper and will support installation of the first Bandalong trash trap in Montgomery County along Lockridge Drive, a tributary to the Anacostia River. The project will also include an educational component.

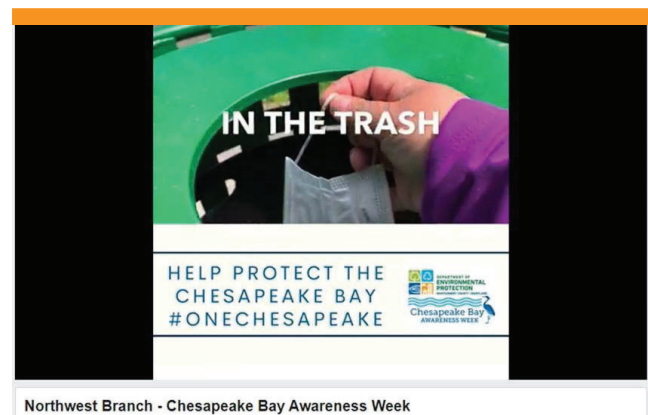
DEP continues to monitor trash in the Anacostia Watershed to measure trash-reduction efforts. In FY20, DEP launched a community-based social marketing outreach campaign in the White Oak neighborhood. This area was chosen from the Anacostia trash monitoring sites because it has the highest recorded trash in the stream. Baseline monitoring was conducted, and the outreach and campaign messaging was pilot-tested with focus groups. The campaign launched in September 2019 with bus ads, flyers, and posters distributed to local apartment complexes and businesses, and an effort to engage local schools.

A paid social media ad campaign was planned for Spring 2020; however, due to the COVID-19 pandemic, the ads were deemed unusable as they did not promote social distancing. When appropriate, the campaign materials will be modified and brought to areas in the Anacostia region to run a more widespread campaign.

In FY20, DEP continued to work with active community groups to support and expand local cleanup efforts particularly in the Anacostia Watershed. The DEP supported 4 volunteer cleanups. Volunteers removed 2,282 pounds of trash, all of which came from within the Anacostia Watershed.

## Property Management

All County agencies that operate maintenance facilities must comply with the general permit for stormwater. The County's 11 facilities and the Montgomery County Public Schools' 6 facilities maintain a stormwater pollution prevention plan and implement good housekeeping, such as routine sweeping. County facilities are inspected monthly and stormwater outfalls on the sites are inspected quarterly. Annual training is delivered to all facility operation employees, including ways to minimize the use of hazardous substances, pollutants, and contaminants, and prevent their exposure to precipitation and stormwater runoff.

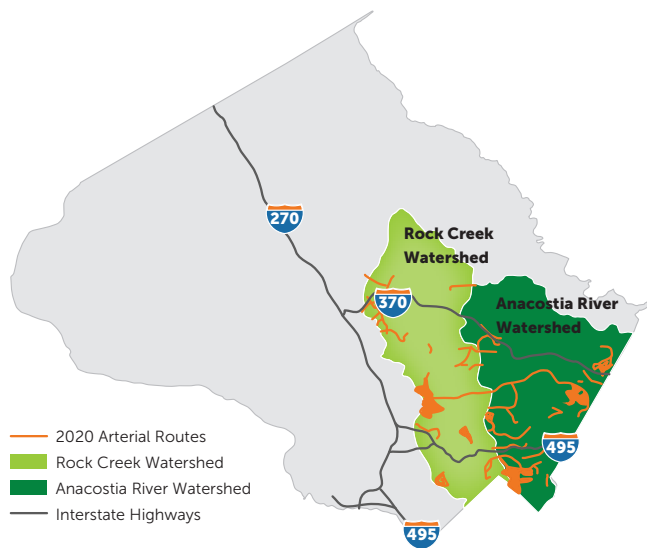


Facebook Video about Proper Mask Disposal (English)



Facebook Video about Proper Mask Disposal (Spanish)

## Montgomery County Arterial Street Sweeping Routes



Street Sweeper

## Road Maintenance

Each year, tons of pollutants are prevented from entering the County's streams by street sweeping and cleaning storm drain pipes and inlets. DOT and DEP jointly oversee the street sweeping program.

The County's street sweeping program was smaller in 2020 than in past years. The County-wide sweeping done by DOT was canceled for two reasons: (1) little granular salt was used on the roads over the winter, and (2) the COVID-19 pandemic affected the number of available staff. DOT anticipates resuming the County-wide sweep in 2021.

The sweeping of arterial routes is paid for and administered by DEP and this work continued as scheduled. Arterial routes are generally larger roads with more commercial activity, traffic, and observed trash. In FY20, DEP swept the arterial routes 24 times. In November 2019, the routes were reduced from 370.3 to 227.2 miles per cycle as a cost-saving measure. The sweeping is located to maximize the environmental benefits in the Rock Creek and Anacostia River Watersheds, which have pollution limits for sediment and phosphorus. In FY20, DEP swept 6,598 curb miles of roadway and collected 680.5 tons of material, a 19 percent decrease from the 836 tons of material collected in FY19.

In addition, DOT removes material from inlets and storm drains using a vacuum truck or manual labor. The amount of material collected is converted to equivalent impervious acres. In FY20, 114 inlets and over 42,000 linear feet of storm drain were cleaned.

The road maintenance program also includes minimal use of herbicides and no fertilizers for roadside vegetation management.

In addition, de-icing materials (sand, salt, and salt brine) are carefully tracked to improve salt use management. In FY20, the snowfall total average was only 3 inches, significantly lower than all other permit years, including 28 inches in FY19 and 16.1 inches in FY18.

Therefore, deicing materials used were reduced, totaling only 6,410 tons of salt and 97,097 gallons of salt brine.

## Arterial Street Sweeping Program by Watershed in FY20

Watershed	Miles Swept Per Cycle	Percent	Impervious Area Credit (acres)	Total Nitrogen Removal (lbs.)	Total Phosphorous Removal (lbs.)	Total Suspended Solids (tons)
Anacostia	124.7	54.9	149	1,307	523	78.4
Rock Creek	102.5	45.1	123	1,075	430	64.5
Grand Total	227.2	100.0	272	2,382	953	142.9



## Public Education and Outreach

The County continues to implement a robust public education and outreach program designed not only to meet permit requirements, but also to increase local awareness of stormwater management benefits and to bring associated behavior changes. DEP is exploring ways to better quantify pollutant reductions associated with behavior changes related to public education and outreach.

In mid-March 2020, the County had to stop holding in-person outreach events due to the COVID-19 pandemic. In response to the pandemic, DEP switched its public engagement to online, virtual, and video communications. Following are highlights of the FY20 public education and outreach program:

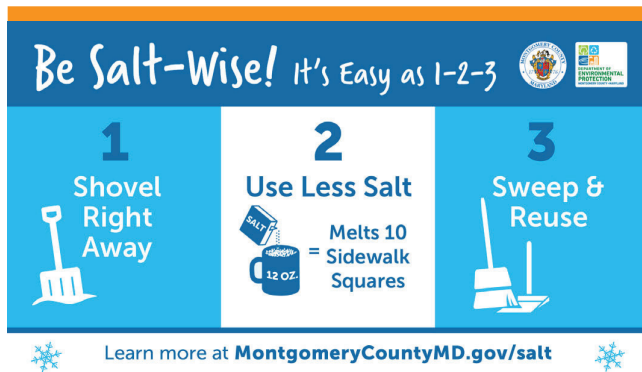
- **Social Media** – In FY20, the My Green Montgomery online educational portal (<http://www.mygreenmontgomery.org>) continued to serve as the news and communication arm of the DEP.
  - During the year, 160 blogs were posted, an increase of 38 percent over FY19. The My Green Montgomery website had 50,438 users and 189,528 page views in FY20.
  - The DEP now has 2,364 Facebook followers, 2,549 Twitter followers, and 1,348 Instagram followers throughout FY20. Water specific campaigns included a Salt-wise campaign and Holiday Gift Outside the Box campaign focused on recycling, reuse, and reducing plastic bag usage during the holidays.
  - Because of the COVID-19 pandemic, beginning in March, face-to-face outreach events were canceled and many were replaced with digital platforms and social media. In celebration of Earth Month in April and Chesapeake Bay Awareness Week in June, strategic emphasis was placed on Facebook Live events and digital events on Zoom and Microsoft Teams. These two efforts garnered 9,599 and 26,965 impressions; reach of 8,546 and 15,331; and engagement of 1,284 and 1,437 respectively.

## Areas of Significant Social Media Increases in FY20

Activity/Communication Mechanisms	Percent Increase
DEP website users	26
DEP website pageviews	17
My Green Montgomery website users	90
My Green Montgomery website pageviews	243
Facebook followers	32
Twitter followers	22
Instagram followers	127
Facebook engagement	598
Twitter engagement	91
Instagram engagement	364
Facebook impressions	-32
Twitter impressions	146
Instagram impressions	2,716
Flickr Photo Account	22
My Green Montgomery blogs	38
YouTube videos	25
YouTube subscribers	24



Tweet about Winners of the 2020 Clean Water Act Contest



Salt-Wise Digital Sign



Social Media Message about Bacteria in Pet Waste and the Need to Pick it Up



Trivia Facebook post

- **Newsletters** – The My Green Montgomery monthly e-newsletter continued to use the GovDelivery platform in FY20 but recorded a decrease in subscribers from FY19; potentially as a result of a hiatus during a staffing transition. The quarterly RainScapes Gazette and the RainScapes Gazette for Landscape Professionals (Pro Gazette) continued to reach a broad range of County and regional subscribers. There are currently 5,458 RainScapes Gazette subscribers and 3,501 Pro Gazette subscribers. FY20 numbers represent an increase from FY19 of 14 percent for the RainScapes Gazette and 23 percent for the Pro Gazette.
- **Outreach Events** – Before the cancellation of in-person outreach events due to the COVID-19 pandemic beginning in March 2020, DEP hosted or participated in 164 outreach events with more than 32,700 attendees reached by stormwater outreach activities. Beginning in March, large events, including GreenFest and Earth Day, were canceled and replaced with a greater emphasis on social media engagement.
- **Pet Waste Management** – Since DEP initiated a pet waste pilot program in FY14 to help reduce bacterial levels in watersheds, 42,920 pounds of dog waste have been collected in 156 pet waste stations. In FY20,
  - DEP worked with 19 communities to remove pet waste from the watershed and assist in meeting bacteria TMDLs. More than 10,500 pounds of pet waste were removed through 59 pet waste stations, serving 5,310 households. The pet waste stations prevented 110.1 trillion fecal coliform bacteria, 606.6 pounds of nitrogen, and 79.1 pounds of phosphorous from potentially entering local streams. The program was able to be maintained during the pandemic, but visits to new homeowners' associations on the waiting list were suspended from March to mid-May. In FY20, 12 new communities were added to the program and 7 communities "graduated" after completing their 1-year program; all 22 pet waste stations were adopted by the graduating communities.
  - Lawn signs in English and Spanish encouraging people to pick up after their dogs continued to be distributed (150 in English and 50 in Spanish).
  - Social media was used to continue to educate people about the importance of picking up after their pets.
- **GreenFest** – The annual April Montgomery County GreenFest had to be canceled in FY20 due to the COVID-19 pandemic.
- **Cache the Rain Stormwater Awareness Program** – The Caching the Rain Geotrail is a scavenger hunt geocaching activity with a stormwater pollution outreach focus. DEP established geocaches at six locations, primarily in the lower (more urban) part of the County near stormwater facilities. Participants answer stormwater-related trivia questions at each station and verify their answers in a survey once they complete the trail. The six locations have been visited collectively 1,564 times. This represents an 11.7 percent increase from FY19.



- **Capital Improvement Program Outreach** – A higher degree of outreach was placed on social media, digital platforms such as Zoom and videos in FY20 due to the COVID-19 pandemic. DEP conducted its first virtual public meeting with residents of Glenmont Forest who will be receiving a Green Streets project in FY21.
- **Stream Stewards** – The Stream Stewards program promotes champions for neighborhood streams and increases community involvement in stormwater awareness and watershed protection. Activities include watershed ambassadors and keepers, volunteer cleanups, storm drain art, and participation in trainings. In FY20, 70 volunteers contributed a total of 952 hours of service before activities were limited by the pandemic in March.



Chesapeake Bay Water Awareness Week Facebook Post

## Watershed Assessment

In accordance with the MS4 permit, the County has systematically assessed water quality within all of its watersheds, identified water quality improvement opportunities, and developed implementation plans to control stormwater discharges. DEP is currently implementing those plans as part of the County's MS4 program.

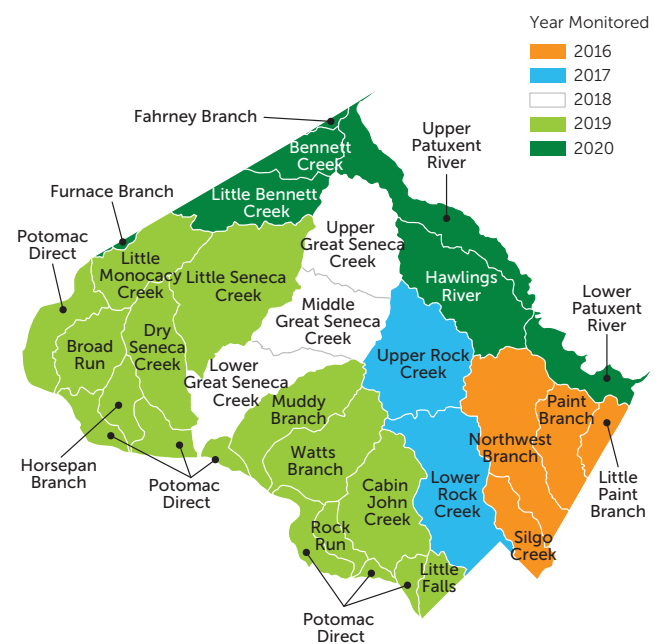
### Watershed Screening

DEP's Stream Monitoring Team monitors the aquatic biological community (fish and benthic organisms) and stream habitat conditions at representative stations in all County watersheds on a rotating basis over a 5-year cycle. Monitoring results enable the County to assess watershed health and changes over time. DEP also adds randomly selected monitoring stations within each watershed to help assess watershed-wide stream conditions. DEP's full 5-year cycle of baseline watershed conditions from 2011 to 2015 is available as an interactive map at: <https://www.montgomerycountymd.gov/water/streams/watershed-health.html>. This map allows users to examine the health of more than 150 sub-watersheds in the County by zooming in or searching by address.

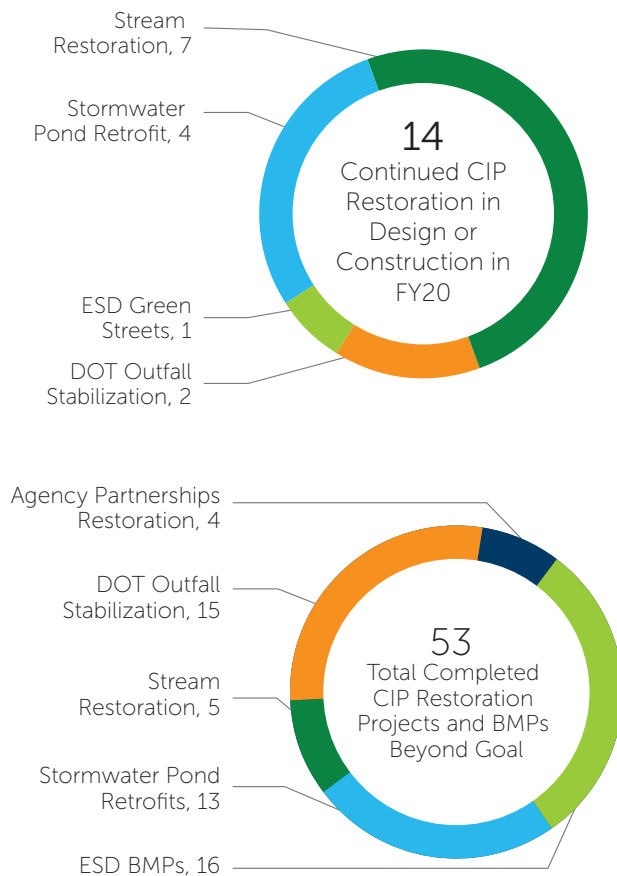
In 2019, DEP conducted stream monitoring in Cabin John, Little Seneca and Dry Seneca sub-watersheds of Seneca Creek, and Potomac Direct, which includes Little Monocacy Creek, Broad Run, Muddy Branch, Watts Branch, Rock Run, Little Falls, and 8 smaller tributaries.

The stream conditions in the Cabin John, Seneca Creek, and Potomac Direct watersheds have remained fairly consistent over the study period even with habitat conditions in decline since 2006. Stream conditions generally improve toward the western part of the County where land use is more rural and a part of the agricultural reserve. The more urbanized areas, with older stormwater management, generally have poorer conditions. Conditions of the benthic communities in these three watersheds remain impaired with overall conditions helped by substantially healthier fish communities. Most benthic communities are impaired for reasons other than habitat, including chronic high flows, sedimentation, high temperatures or other stressors. Chronic high and low pH may be an additional stressor in the Potomac Direct sub-watersheds not seen in Cabin John and Seneca Creek.

### Montgomery County's Monitoring Cycle 2016-2020



Biologists Monitoring Stream Quality



## Watershed Restoration

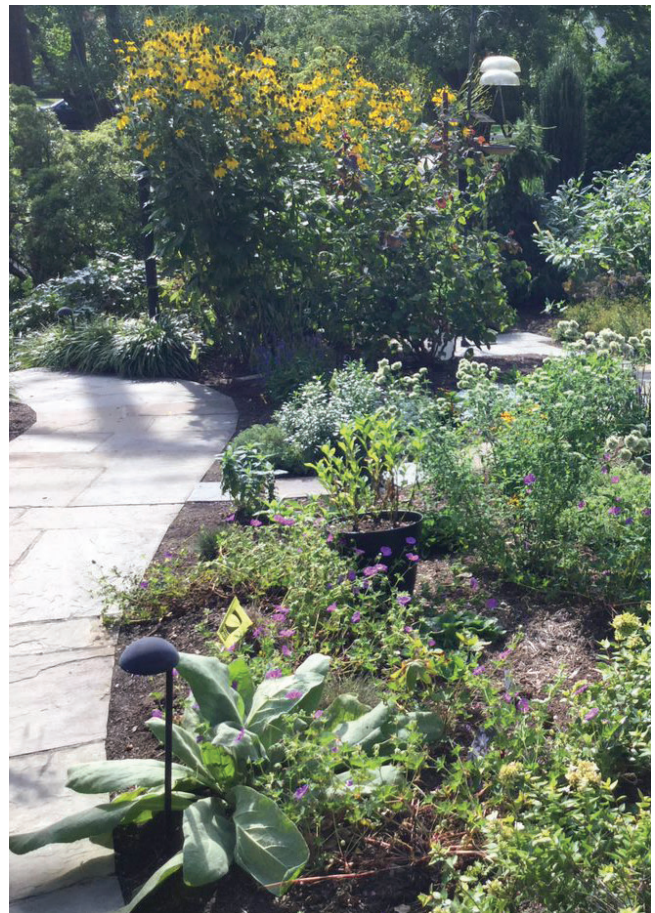
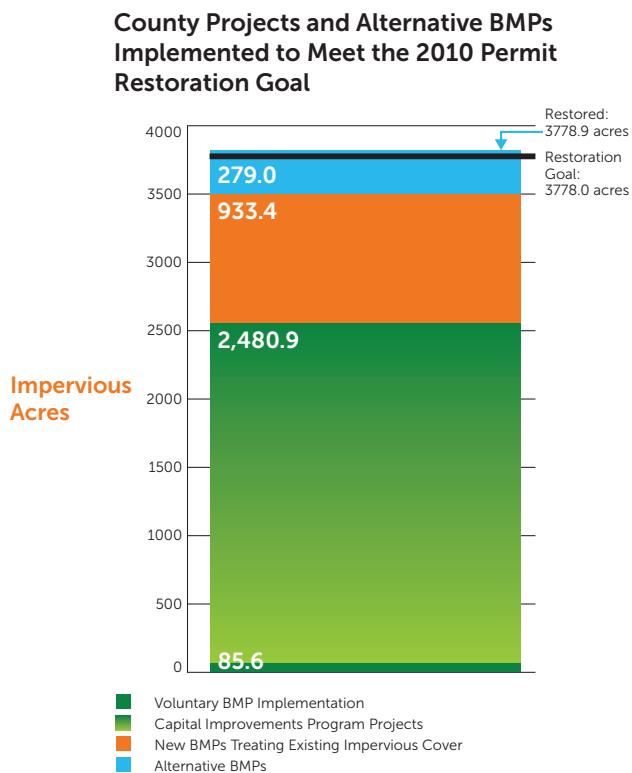
### Continued Restoration Beyond the 2010 Permit Restoration Goal

The County continued to implement restoration work in FY19 and FY20 after the 2010 permit restoration requirement was met in December 2018. New work includes 6,592 completed restoration projects and BMPs, 53 of these being CIP projects. Another 21 projects are already in design or construction, 14 of these being CIP projects. The RainScapes program, in particular, has continued to grow in popularity with 391 RainScapes projects completed beyond the restoration goal. Rebate amounts were significantly increased in November 2018, and both the program and the increase in rebates were publicized. In FY20, 453 projects were submitted, double the number of projects submitted in FY18.

### 2010 Permit Restoration Goal

The County's MS4 area comprises 25,119 impervious acres, with 6,230 controlled to the maximum extent practicable by the end of the previous permit (2009). The current permit requires the County to restore 20 percent of the remaining uncontrolled impervious acres, which translates to an additional 3,778 acres.

**The County completed restoration of 3,778 acres of impervious surfaces, fulfilling the terms of the April 2018 Consent Decree.**



RainScape Conservation Landscape





White Oak Green Street

The County met the permit watershed restoration goals through implementation of the following types of projects:

- **Green Streets** – The County implemented one of the first green street programs in the state, installing 328 green street BMPs in 9 neighborhoods and restoring 73.5 impervious acres. Green street BMPs not only capture stormwater, but also create aesthetically attractive streetscapes, provide natural habitats, and help visually connect neighborhoods, schools, parks, and business districts. (<https://www.montgomerycountymd.gov/water/restoration/green-streets.html>).
- **Public Property BMPs** – The County installed 45 ESD practices and 4 underground water quality treatment systems on public property, treating more than 19.3 impervious acres to meet the 2010 permit restoration goal.
- **Stormwater Pond Retrofits** – The County retrofitted 36 stormwater ponds and installed 1 new pond, treating a combined total of 1,213.2 impervious acres to meet the 2010 permit restoration goal. In addition, 5 pond retrofits treating 205.7 impervious acres are being carried forward to the next permit as a result of the increase in stream restoration credit. Stormwater pond retrofits have focused on the ponds located in the Anacostia River, Rock Creek, and Seneca Creek Watersheds. These retrofits include native planting, wetland planting, and native trees to provide ecological habitat benefits.
- **Stream Restoration Projects** – The County completed 16 stream restoration projects, restoring almost 30,000 linear feet of stream and 896.3 impervious acres to date. Stream restoration projects are focused in the Anacostia River, Rock Creek, and Seneca Creek watersheds.
- **Community-based Restoration Watershed Grants** – DEP administers a watershed grant program through the Chesapeake Bay Trust. More than \$1.7 million in grant projects have been funded using the Chesapeake Bay Trust to administer the grants.



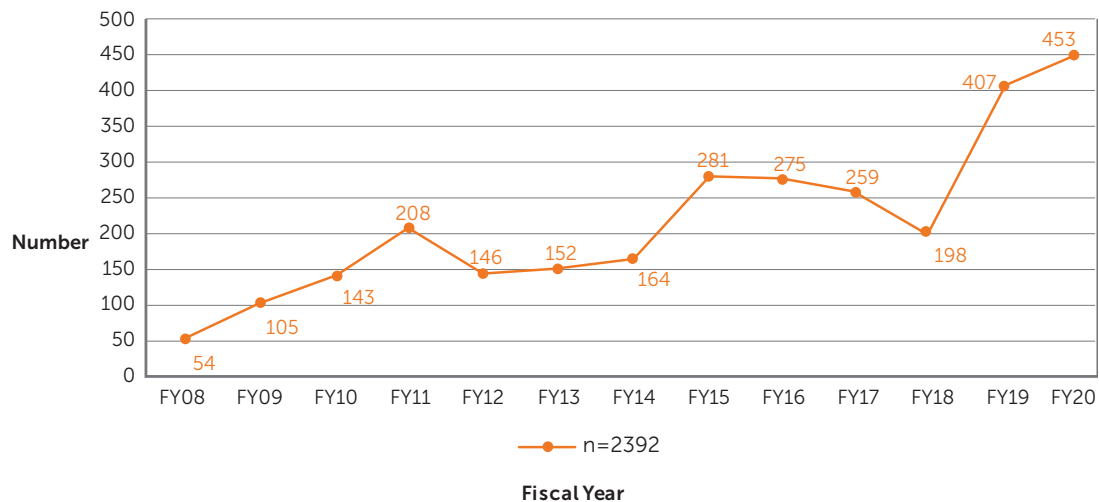
Falls Reach Stream Before



Falls Reach Stream After



### Number of RainScapes Rewards Projects Submitted by Fiscal Year



Learning about RainScapes (February)

- **RainScapes Program** – DEP implements a RainScapes program to promote and implement environmentally-friendly landscaping and small-scale stormwater management projects on residential, institutional, and commercial properties and offers technical and financial assistance. RainScapes Rewards provide rebates to property owners who install qualified small-scale stormwater projects. The RainScapes program has treated 55.4 impervious acres in the County to meet the 2010 permit restoration goal from the implementation of rain gardens, rain barrels, cisterns, conservation landscaping, pavement removal, and permeable pavement. The 55.4 acres were achieved by a combination of Rewards Rebates, demonstration projects installed by DEP RainScapes on neighborhood and publicly-accessible properties, and curricular projects at Montgomery County Public Schools. In total, 1,477 RainScapes projects have reduced runoff to meet the 2010 permit restoration goal.



Tanterra Delivery for RainScapes

- **Alternative BMPs** – Alternative BMPs provide water quality benefits that give the County additional methods to meet restoration requirements. These types of BMPs include removing impervious surfaces, connecting septic systems to wastewater treatment plants, cleaning catch basins and storm drains, and sweeping streets. Two alternative BMPs that have been implemented extensively by the County are Urban Tree Canopy Expansion projects, which provide credit for every new individual tree planted in developed areas, and Urban Reforestation projects, which are implemented in urban or suburban areas with the intent of establishing forest ecosystem processes. A total of 279.0 acres were treated with alternative BMPs to meet the 2010 permit restoration goal.



## Assessment of Controls

### Watershed Restoration Assessment

The permit requires the County to assess the effectiveness of its stormwater management program and control measures using pre-restoration and post-restoration watershed monitoring, which includes chemical, physical, and biological monitoring. DEP targeted the Breewood Tributary in the Anacostia Watershed for comprehensive watershed restoration and assessment efforts.

DEP has completed the Breewood Tributary Water Restoration Project. This project installed and restored the following:

- 11 ESD practices along residential roads
- 3 RainScapes projects on individual residential properties
- 1,200 linear feet of stream restoration
- 12 ESD practices at University Towers Condominiums
- 1 ESD practice at the Northwood Presbyterian Church

The Breewood Tributary Restoration Project is designed to quantify the changes in both water quality and water quantity resulting from comprehensive watershed restoration efforts. The project will also provide valuable information regarding how long it takes after completion of restoration projects for benefits to be seen in stream. Potential benefits of watershed restoration include stabilized streambanks, reduced pollutant load, reduced flooding, and improved ecological health.

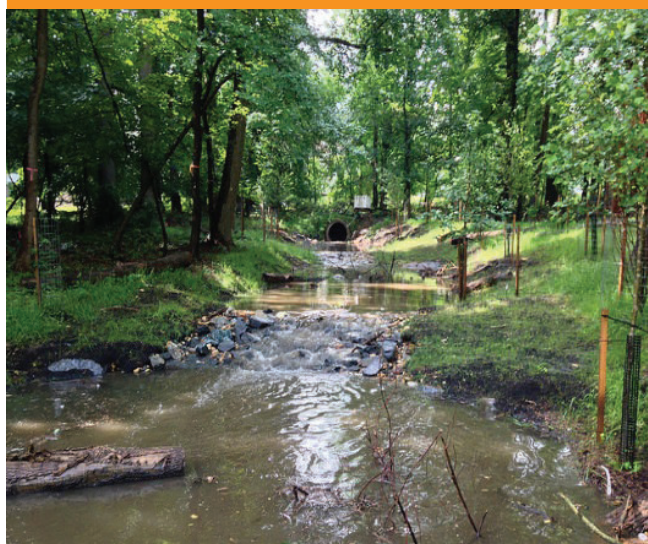
Monitoring the Breewood Tributary Watershed is intended to generate information on the effectiveness of an intensive watershed restoration in improving water quality and stream conditions. The study design focuses on comparing conditions before the project with conditions after the completion of restoration efforts. Monitoring of the watershed began in 2009. Various projects were installed from 2014 through 2018. During this period, data collected reflect transitional conditions and construction impacts. Beginning in 2019, the data provide information on the completed watershed restoration. This data can be compared with data collected between 2009 and 2014 to evaluate the effectiveness of the overall effort. Preliminary analysis of the project is as follows:

- Improved hydrology
- Loads of total suspended solids (TSS) and pollutants that bind to TSS (phosphorus, copper, lead) were reduced.
- Loads of soluble Total Kjeldahl Nitrogen and Nitrate+Nitrite are up along with biological oxygen demand and zinc.

Additional analysis is underway and more definitive results will be available after additional data has been collected in FY21.



Upstream View of Sligo Creek, Breewood Tributary, Study Area 1, Pre-Restoration (2013)



Upstream View of Sligo Creek, Breewood Tributary, Study Area 1, Post-Restoration (2013)



BMPs Installed at University Towers

## Stormwater Management Assessment

The permit requires the County to assess the effectiveness of stormwater management practices found in the Maryland Stormwater Design Manual for stream channel protection. DEP monitors the developing Newcut Road neighborhood tributary to the Little Seneca Creek “test” area in the Clarksburg Special Protection Area and compares results with those from the undeveloped Soper’s Branch, Little Bennett sub-watershed “control” area to evaluate the effectiveness of the design manual criteria in protecting the stream channel.

Results of biological, physical, and hydrologic monitoring indicate the stream channel in the test area may still be in a state of flux as the system responds to the new development. Preliminary results indicate that the change in land use from agricultural to residential has impacted the test area causing instability (erosion) in the stream channel. The streams will remain unstable as they adjust to receiving more runoff at a faster rate from impervious surfaces in the newly developed area.

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## Program Funding

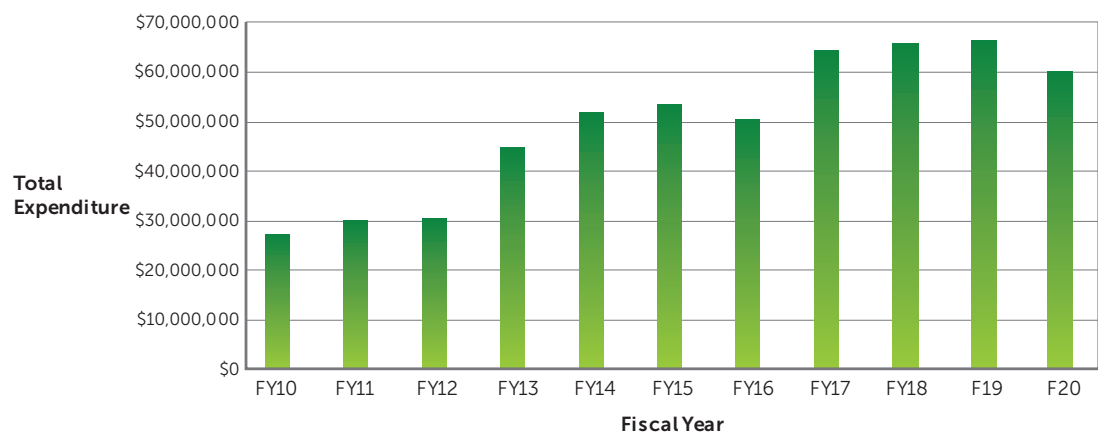
The County has demonstrated its commitment to meet stormwater initiatives by investing more than \$129 million in CIP projects and more than tripling its WQPC funding over the permit term.

Total expenditures for all programmatic measures, including personnel and CIP costs, have increased substantially through the permit term, except in FY16, when legal challenges against the WQPC limited expenditures.

During FY20, the reported total expenditures associated with all permit requirements was \$59,696,011, which is a decrease of 10.4 percent over the permit expenditures in FY19. The decrease in expenditures is a result of the reduction of design and construction projects while awaiting the issuance of a new MS4 permit. In addition, the COVID-19 pandemic affected the efficiency and speed of CIP project implementation, which affected the project spending rates.

Highlights of the stormwater management budget include continuing the planning and implementation of stormwater management projects, public outreach, stream monitoring, and other actions needed to comply with the County’s MS4 permit. Expanding the use of contracts and partnerships through a new CIP will help the County meet permit goals in a more cost-effective manner.

**Total Expenditures for MS4 Related Programs by Fiscal Year**



In FY19, the County applied for low-cost financing through the Maryland Water Quality Revolving Loan Fund, which will be secured by the WQPC. Through this loan program, the County stands to save an estimated \$22 million in financing costs, over the life of the loans, as compared with traditional bond funding. On December 20, 2019, the County closed on two



loans to fund two restoration projects that will be used for MS4 restoration credit anticipated for the next MS4 permit. The two loans also fund repair and replacement of stormwater facilities and conveyance systems. The total loan amount awarded to the County is \$50,667,320. The County also modified its approach of using separate contracts for impervious surface restoration design and construction of stormwater management facilities and is pursuing a design-build contracting vehicle to support restoration requirements anticipated in the next permit. This mechanism has provided significant cost efficiencies in other jurisdictions. As a result of these changes to the capital budget, the WQPC rate in FY20 remained the same as in FY19.

The County submitted a draft biennial Financial Assurance Plan (FAP) on February 15, 2021 to MDE. Law requires Phase I MS4 jurisdictions to project annual and 5-year costs to meet the requirements of their MS4 permit. Montgomery County's FAP demonstrates that its 2010 MS4 permit impervious surface requirement was fulfilled as of December 31, 2018, midway through FY19. The County will submit the final FAP once approved by County Council and certified by the County Executive.

## Total Maximum Daily Load

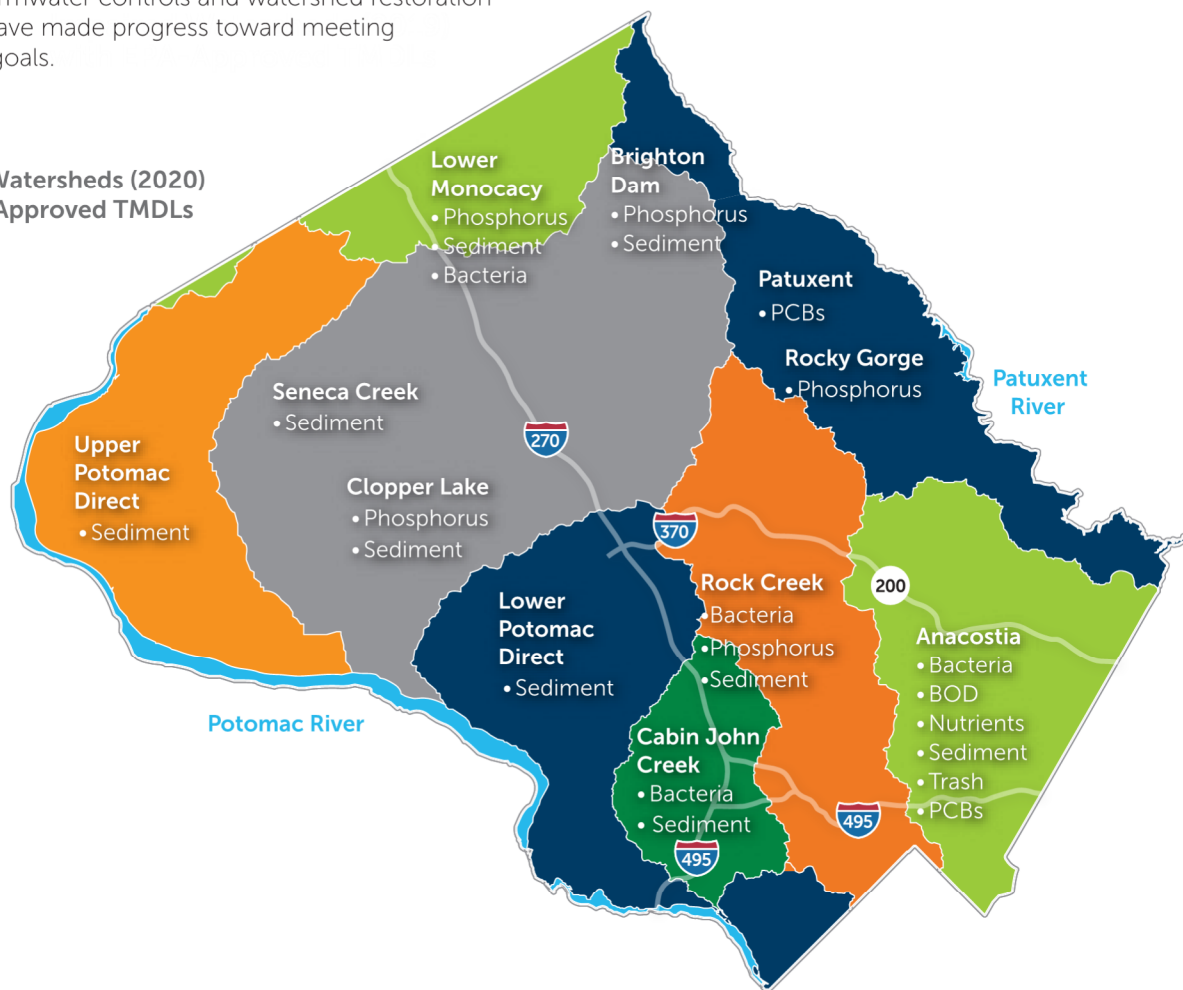
The permit required the County to develop implementation plans to achieve progress toward the County's waste load allocations associated with the TMDLs that existed when the permit was issued in 2010. These plans were developed and submitted within 1 year of the start of the permit, as required.

Additional TMDLs were added after the permit was issued, and TMDL implementation plans either have been completed or are included in a County-wide Coordinated Implementation Strategy.

County stormwater controls and watershed restoration initiatives have made progress toward meeting the TMDL goals.

A **TMDL** is a regulatory term that describes the maximum amount of a pollutant that a water body can receive while still meeting water quality standards.

### Impaired Watersheds (2020) With EPA-Approved TMDLs



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## II. Introduction

This submission by the Montgomery County (the County) Department of Environmental Protection (DEP) to the Maryland Department of the Environment (MDE) fulfills the annual progress report requirement as specified in Part IV of the Municipal Separate Storm Sewer System (MS4) Permit Number 06-DP-3320 MD0068349 (MS4 Permit or the Permit). The DEP is submitting its 11th report in this current permit cycle (February 16, 2010 through February 15, 2015).

The 5-year Permit term began February 16, 2010, covering stormwater discharges from the County's MS4. The Permit term expired on February 15, 2015. The DEP submitted a reapplication for their MS4 Permit in the fourth MS4 Annual Report, submitted on March 31, 2014. As provided in Code of Maryland Regulations, Section 26.08.04.06A(3), if a new permit is not issued by MDE after timely reapplication by the permittee, then "the terms and conditions of the existing permit shall continue and remain fully effective and enforceable." Because MDE has not yet issued a new permit, the County continues to implement the requirements of the existing Permit, which is administratively continued and is now in its 11th year.

The County has made considerable progress in meeting all Permit requirements since 2010, including maintaining adequate legal authority, identifying pollutant sources, expanding the County stormwater facility maintenance and inspection program, enhancing property management programs to reduce stormwater pollution, expanding our stormwater pollution awareness outreach programs, making progress on meeting the County wasteload allocations for approved total maximum daily loads, and assuring adequate funding for the Permit-required programs.

The County has always been a leader in implementing innovative and aggressive stormwater programs, including the ambitious restoration goal in its current Permit. Even with the support of the Montgomery County Executive and County Council, the restoration goal proved to be challenging. In April 2018, MDE and DEP signed a Consent Decree (CD) identifying corrective actions to bring the County into compliance with the 2010 MS4 Permit. The 5-year Permit required the County to restore 20 percent of the County's impervious surface area that is not already restored to the maximum extent practicable. MDE approved an impervious surface restoration plan of 3,778 acres.

On October 1, 2019, the County submitted *Montgomery County's Revised Final Consent Decree Completion Report* to MDE showing that, as of December 28, 2018, the County completed restoration of 3,778.9 impervious acres (IAs), thus meeting the restoration requirement in the 2010 MS4 Permit. The revisions included replacing equivalent IAs treated by annual practices with permanent credit and carrying 22 stormwater practices treating 275.91 IAs forward to the next permit. MDE approved the revised report on November 25, 2019, and the Office of the County Attorney then worked with the Assistant Attorney General to jointly file a satisfaction of judgement and notice to terminate the CD on December 16, 2019. An order terminating the CD was signed on December 30, 2019, officially closing the enforcement action.

The County has continued to implement restoration projects since meeting the 20-percent restoration goal in December 2018. During Fiscal Year 2020 (FY20), the County continued its street sweeping and catch basin-cleaning programs and completed 4 stormwater pond retrofits, 1 stream restoration, and 10 outfall stabilization projects. Also, 301 best management practices were voluntarily implemented: 22 through Watershed Restoration Grants and 279 through RainScapes. More than 2,800 trees were planted through the Tree Montgomery and Street Tree Programs. Calculating IA and pollutant reduction credits associated

with these projects is awaiting finalization of MDE's new accounting guidance, which was released for public comment in October 2020.

This FY20 MS4 Annual Report has been organized based on the headings in the Permit's Part III, Standard Permit Conditions, to document implementation of required elements. Required elements of the Permit are presented in a box format at the beginning of each main section.

### III. Standard Permit Conditions

#### A. Permit Administration

A. **Permit Administration**

The County shall designate an individual to act as a liaison with the Maryland Department of Environment (MDE) for the implementation of this permit. The County Shall provide the coordinator's name, title, address, phone number, and email address. Additionally, the County shall submit to MDE an organizational chart detailing personnel and groups responsible for major NPDES program tasks in this permit. MDE shall be notified within 14 days of any changes in personnel or organization relative to NPDES program tasks.

The designated individual to act as a liaison with the MDE is as follows<sup>1</sup>:

Amy Stevens, Manager  
Department of Environmental Protection  
2425 Reddie Drive, 4th Floor  
Wheaton, MD 20902  
240-777-7766  
Amy.Stevens@montgomerycountymd.gov

Table III.A.1 lists County personnel responsible for major National Pollutant Discharge Elimination System (NPDES) program tasks; these are the County's contacts as of December 2019.

Table III.A.1. Organization Chart for Montgomery County Permit Required Programs				
Permit Section	Responsible Party			
	Department	Name	Title	Telephone
<b>Part III. Standard Permit Elements</b>				
A. Organization Chart—Liaison with MDE for Permit Implementation	DEP	Amy Stevens	Manager	240-777-7766
B. Legal Authority	OCA	Walter Wilson	Associate County Attorney	240-777-6759
C. Source Identification	DEP	Vicky Wan	Division Chief	240-777-7722
D. Discharge Characterization (as described in Part III H. Assessment of Controls)				

<sup>1</sup> DEP moved in October 2020 from its location in Rockville, Maryland to its new office located in Wheaton, Maryland.



<b>Table III.A.1. Organization Chart for Montgomery County Permit Required Programs</b>				
<b>Permit Section</b>	<b>Responsible Party</b>			
	<b>Department</b>	<b>Name</b>	<b>Title</b>	<b>Telephone</b>
<b>E. Management Programs</b>				
<b>1. Stormwater Management</b>				
1.a. Stormwater Facility Inspections and Maintenance	DEP	Pam Parker	Manager	240-777-7758
1.b. Stormwater Management Permitting and Plan Review	DPS	Linda Kobylski	Division Chief	240-777-6346
2. Erosion and Sediment Control	DPS	Linda Kobylski	Division Chief	240-777-6346
3. Illicit Connection Detection and Elimination Program	DEP	Steve Martin	Field Program Manager	240-777-7746
4. Trash and Litter	DEP	Amy Stevens	Manager	240-777-7766
5. Property Management	DGS	David E. Dise	Director	240-777-6191
6. Road and Roadside Maintenance	DOT	Richard Dorsey	Division Chief	240-777-7600
7. Public Education and Outreach	DEP	Amy Stevens	Manager	240-777-7766
F. Watershed Assessment Countywide Monitoring	DEP	Amy Stevens	Manager	240-777-7766
G. Watershed Restoration Assessments and Project Implementation	DEP	Frank Dawson	Division Chief	240-777-7732
H. Assessment of Controls	DEP	Amy Stevens	Manager	240-777-7766
I. Program Funding	DEP	Patty Bubar	Deputy Director	240-777-7786
J. Total Maximum Daily Load	DEP	Amy Stevens	Manager	240-777-7766
<b>Part IV. Program Review and Annual Progress Reporting</b>	DEP	Amy Stevens	Manager	240-777-7766
<b>Part V. Special Programmatic Conditions</b>	DEP	Amy Stevens	Manager	240-777-7766

DEP Department of Environmental Protection, 2425 Reedie Drive, 4th Floor, Wheaton, MD 20902

DGS Department of General Services, 101 Monroe Street, 9th Floor, Rockville, MD 20850

DPS Department of Permitting Services, Division of Land Development Services, 2425 Reedie Drive, 4th Floor, Wheaton, MD 20902

DOT Department of Transportation, Division of Highway Services, 101 Orchard Ridge Drive, 2nd Floor, Gaithersburg MD 20878

OCA Office of the County Attorney, 101 Monroe Street, 3rd Floor, Rockville, MD 20850

## B. Legal Authority

### B. Legal Authority

Montgomery County shall maintain adequate legal authority in accordance with NPDES regulations 40 CFR part 122 throughout the term of this permit. In the event that any provision of its legal authority is found to be invalid, the County shall notify the Department within 14 days and specify a schedule for making the necessary changes to maintain adequate legal authority.

County laws provide sufficient legal authority to enable the County to meet the Municipal Separate Storm Sewer System (MS4) Permit requirements. Those laws are as described in the following subsections.

### B.1 Montgomery County Code Chapter 19 – Erosion, Sediment Control, and Stormwater Management

Chapter 19 was enacted to protect, maintain, and enhance the public health, safety, and general welfare by establishing minimum requirements and procedures to control the adverse impacts associated with land disturbance and increased stormwater runoff from developed and developing properties. Chapter 19 includes the following guidelines:

- Article I establishes the County’s legal authority to administer a sediment and erosion control program.
- Article II establishes the County’s legal authority to administer a stormwater management (SWM) program.
- Article IV establishes the County’s authority to prohibit the discharge of pollutants to waterbodies within the County without a state-issued permit and control water quality by establishing an inspection and enforcement regime that includes penalties for noncompliance.

The following subsections describe the modifications to Chapter 19 that have occurred during the current Permit cycle.

#### B.1.a Stormwater Management

In July 2010, Montgomery County Council enacted Expedited Bill 40-10 (Stormwater Management – Revisions), which was later amended in July 2011 by Expedited Bill 7-11 (Stormwater Management – Revisions). Together, these bills updated the County’s SWM law to require management of stormwater runoff by using nonstructural best management practices (BMPs) to the maximum extent practicable (MEP) for new development and redevelopment projects approved by the County’s Department of Permitting Services (DPS). The council also brought the County’s SWM law into compliance with the Maryland Stormwater Management Act of 2007 and associated state implementing regulations adopted in 2010.

The County’s revised SWM law contains more stringent requirements than the Maryland state law for redevelopment sites to protect water quality. Specifically, the Maryland SWM regulations require the first

inch of runoff from 50 percent of the redevelopment site to be managed using environmental site design (ESD) to the MEP (26.17.02.05.D(1)(b)). County law requires both SWM of the water quality volume (WQv, the first inch of runoff) and channel protection volume (expected runoff from a 1-year 24-hour duration rainfall) from 100 percent of the redevelopment site and requires using ESD to the MEP to meet these standards (Chapter 19, Article II, Section 19-26).

### B.1.b Sediment and Erosion Control

In March 2013, Montgomery County Council enacted Expedited Bill 1-13, Erosion and Sediment Control – Special Protection Areas – Amendments, which brings local erosion and sediment control requirements into compliance with the Maryland Stormwater Management Act of 2007 and the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The County legislation mirrors the requirements of state law and regulations by, among other things, including enforcing more stringent stabilization requirements and establishing maximum grading unit criteria. In addition, this law requires persons that engage in land-disturbing activities in areas designated as a Special Protection Area (SPA) to pay a monitoring fee, established by regulation, to the DEP in lieu of developing and implementing their own BMPs monitoring plan. The monitoring regulation is codified at Code of Montgomery County Regulation (COMCOR) Section 19.67.03.01.

### B.1.c Water Quality Protection Charge

In April 2013, Montgomery County Council enacted Expedited Bill 34-12, Stormwater Management – Water Quality Protection Charge, to bring County law into compliance with a state law enacted by the General Assembly as House Bill 987, mandating that local charges be levied to pay for stormwater remediation in Phase I jurisdictions.

In April 2015, the Council enacted Bill 2-15, Stormwater Management - Water Quality Protection Charge - Credit and Financial Hardship Exemption Deadlines, which extended the deadline for submittal of both requests for credit against the water quality protection charge (WQPC) and financial hardship exemptions to September 30 of each year, after annual property tax bills are posted in July.

In November 2015, the Council enacted Expedited Bill 45-15, Stormwater Management - Water Quality Protection Charge – Curative Legislation, to explicitly designate the WQPC as an excise tax under the County’s general taxing authority in response to an adverse court ruling premised on the assumption that the WQPC was intended to function as a fee-for-service.

In June 2016, the Council enacted Expedited Bill 11-16, Stormwater Management – Water Quality Protection Charge – Grants – Credit, to authorize the establishment of a watershed restoration grant program for certain owners of improved aircraft landing areas to offset costs of the WQPC, clarify the eligibility criteria for a property owner to receive a WQPC credit, and expand the timeframe for a property owner to appeal the denial of a request for a credit or adjustment of the amount of the WQPC billed to the property owner. These legislative changes and corresponding regulatory changes (Executive Regulation 12-16AM, also adopted in June 2016) modify the credit award to being based on the proportion of the water volume treated by the SWM system. With the credit awards being tied to treatment volume, a credit of 60 percent can be provided for properties using traditional SWM and up to 80 percent for properties with SWM systems that implement ESD to the MEP. Additionally, these changes increase the maximum credit for a nonresidential or multifamily residential property to 100 percent for treating adjacent properties.

In January 2018, the Council enacted Bill 1-18, Stormwater Management – Water Quality Protection Charge – Appeals, to require property owners who want to appeal the County’s imposition of the WQPC or the denial of a WQPC tax credit take their appeal to the Maryland Tax Court, rather than the Montgomery County Board of Appeals; this is consistent with Bill 45-15, which designated the WQPC as an excise tax imposed under the County’s general taxing authority.

### B.1.d Coal Tar Sealants

In September 2012, the Council enacted Bill 21-12, Erosion, Sediment Control and Stormwater Management - Coal Tar Pavement Products, which banned selling and using coal tar products in the County. Under that law, using a coal tar-based sealant can result in a fine of up to \$1,000 for each violation. Depending on the circumstances, fines may be imposed on the applicator, the property owner, or both.

## B.2 Additional Laws to Protect Local Water Quality

Beyond Chapter 19, other legislation enacted in support of water quality protection programs required under the Permit include those described in the following subsections.

### B.2.a Carryout Bag Tax (Chapter 52, Article XIV)

In January 2012, the Council enacted Bill 8-11, Taxation - Excise Tax - Disposable Carryout Bags, to help the County meet the litter reduction Permit requirements. The tax’s goal was to generate revenue for the County’s SWM programs, increase awareness of disposable bag litter pollution, and reduce the use of carryout bags. The carryout bag tax law imposes a tax of 5 cents, which is collected at the point of sale, for each paper and plastic bag that a customer takes from certain retail establishments to carry purchases. The County’s Department of Finance is responsible for enforcing the bag tax law.

### B.2.b Expanded Polystyrene Food Service Ware (Chapter 48, Article VI)

In January 2015, the Council enacted Bill 41-14, Solid Waste (Trash) - Food Service Products - Packaging Materials – Requirements, which bans using and selling expanded polystyrene food service ware and loose fill packaging. The law requires that disposable food service ware purchased and used in the County be either recyclable or compostable. This law applies to County agencies, contractors, and lessees as of January 1, 2016, and for all other food service businesses as of January 1, 2017. DEP’s Division of Solid Waste Services developed an education campaign to inform food service businesses, certain retailers, and consumers about the compliance requirements and deadlines.

### B.2.c Pesticides – Notice Requirements – Cosmetic Pesticide Use Restrictions (Chapter 33B)

County Bill 52-14, Pesticides – Notice Requirements – Cosmetic Pesticide Use Restrictions, became law on October 20, 2015. This law accomplishes the following:

- Restricts the use of certain substances on lawns in the County and permits only those substances that (a) contain active ingredients recommended by the National Organic Standards Board or (b) are designated as minimum risk pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act. These restrictions took effect on January 1, 2018;
- Places additional notification requirements on pesticide retailers and applicators;
- Requires implementing a public outreach and education campaign related to the law; and
- Requires the Montgomery County Parks Department to implement a pesticide-free parks program.

## B.2.d Solid Waste – Illegal Dumping and Litter Control (Chapter 48)

In March 2016, the County passed Bill 1-16 to amend the existing County law to prohibit the disposal of garbage and other solid waste on certain public and private property and provide additional penalties as authorized in a 2015 amendment to the state law. Bill 1-16 implements the new authority given to Montgomery County through the Maryland General Assembly's enactment of House Bill 106 to impose additional penalties up to those imposed under state law.

## B.3 Executive Regulation

In April 2016, the County adopted Executive Regulation 16-15 (COMCOR Section 19.67.03) to implement the BMP monitoring fees in the SPAs. This regulation establishes a fee that a private entity or County public agency must pay to the DPS to cover the cost of monitoring stormwater BMPs for any development project in a SPA.

## B.4 Resolution

In February 2019, Montgomery County Council adopted Resolution Number 19-35 to approve the 2018 National Pollutant Discharge Elimination System (NPDES) MS4 Permit Financial Assurance Plan (FAP). A hearing was held on the FAP on January 15, 2019, and on February 15, 2019, the County provided MDE with the FY18 FAP. On June 25, 2019, MDE acknowledged receipt of the FAP. The submission fulfilled the requirements of the 2015 revisions of the Annotated Code of Maryland, Section 4-202.1 of the Maryland Environmental Article, Watershed Protection and Restoration Programs.

## B.5 Co-Permittees

MDE modified the County's Permit effective January 26, 2004 to add six small localities as co-permittees for coverage under Phase II of the NPDES MS4 Permit Program. In FY20, the County continued its oversight, inspection, and enforcement authority over the Towns of Chevy Chase, Kensington, Poolesville, and Somerset, Chevy Chase Village; and one special tax district, the Village of Friendship Heights. Municipality contacts are shown in Table III.B.1.

In January 2010, MDE added Montgomery County Public Schools (MCPS) to the County's Permit as a co-permittee. MCPS designated Brian Mullikin, Environmental Team Leader, Division of Maintenance, and Agustin Diaz, Environmental Specialist, as staff responsible for implementing SWM programs and coordinating Permit issues. MCPS provided a detailed annual report on MS4-related activities; this report is included as Appendix C.

**Table III.B.1. List of Contacts for Co-Permittees**

<b>Co-Permittee</b>	<b>Contact Name and Title</b>	<b>Address</b>	<b>Telephone</b>
Montgomery County Public Schools	Brian Mullikin, MHS Environmental Team Leader	8301 Turkey Thicket Drive, Building A, 1st Floor Gaithersburg, MD 20879	240-740-2324
Chevy Chase Village	Shana R. Davis-Cook, Village Manager Ellen Sands, Director of Municipal Operations	Chevy Chase Village Hall 5906 Connecticut Avenue Chevy Chase, MD 20815	301-654-7300
Village of Friendship Heights	Julian Mansfield, Village Manager	4433 South Park Avenue Chevy Chase, MD 20815	301-656-2797
Town of Chevy Chase	Todd Hoffman, Town Manager	4301 Willow Lane Chevy Chase, MD 20815	301-654-7144
Town of Kensington	Sanford Daily, Town Manager	3710 Mitchell Street Kensington, MD 20895	301-949-2424
Town of Poolesville	Seth A. Rivard, Town Manager	P.O. Box 158 Poolesville, MD 20827	301-428-8927
Town of Somerset	Rich Charnovich, Town Manager	4510 Cumberland Avenue, Chevy Chase, MD 20815	301-657-3211

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## C. Source Identification

### C. Source Identification

Sources of pollutants in stormwater runoff shall be identified and linked to specific water quality impacts on a watershed basis. The source identification process shall be used to develop watershed restoration plans that effectively improve water quality. The following information shall be submitted for all County watersheds in geographic information system (GIS) format with associated tables as required in PART IV of this permit:

1. Storm drain system: major outfalls, inlets, and associated drainage areas delineated;
2. Urban best management practices (BMP): stormwater management facility data including outfall locations and delineated drainage areas;
3. Impervious surfaces: delineated controlled and uncontrolled impervious areas based on, at a minimum, Maryland's hierarchical eight-digit sub-basins;
4. Monitoring locations: locations established for chemical, biological, and physical monitoring of watershed restoration efforts and the *2000 Maryland Stormwater Design Manual*; and
5. Watershed restoration: restoration projects proposed, under construction, and completed with associated drainage areas delineated.

The County continues to improve geographic information system (GIS) data to accurately account for the impervious acres (IA) controlled within the MS4 boundary. Data improvements include digitizing IAs, updating the urban best management practices (BMP) database, and refining existing BMP drainage areas. The information is submitted for all County watersheds in GIS format as required by the Permit in Part IV and Attachment A, Annual Report Databases, Tables A through L. The information can be found in this report's CD attachment in Appendix A, MDENPDES20.accdb, Tables A through L.

### C.1 Storm Drain System

The County's storm drain outfall inventory is found in Appendix A, Table A. Storm drain mapping is continuing to improve, thanks to strong leadership by Montgomery County Department of Transportation (DOT), and consistent interdepartmental collaboration. Significant progress has been made in compiling datasets from many entities in a centralized database and regularly transferring networks verified as built into an integrated "master" dataset, accessible in a universal location. This master dataset represents data vetted to be in the ground and is a reliable stand-alone source of storm drain information at the Countywide level. DOT also hosts and updates a public web map containing up-to-date storm drain data for the County. Much work is still being devoted to quality assurance/quality control (QA/QC) of older data, as well as data quality improvements at all stages of the process. New data are also being regularly added from right-of-way and sediment control permits, field surveys, and other sources, building the inventory's overall comprehensiveness. Additionally, developers now can submit digital storm drain data via the web map, in computer-aided design-format, or in GIS shapefiles. Looking ahead, discussions are ongoing about ways to streamline the data input process and take advantage of technological improvements.



## C.2 Urban Best Management Practices

The County's urban BMP database as of June 30, 2020 with associated coverage is included electronically in Appendix A, Table B. The database uses the format required by the Permit's Attachment A, Annual Report Databases, and Table B, Urban BMPs. The term BMP is also used synonymously with stormwater management (SWM) facility in this report. MDE distributed the new MS4 geodatabase format on March 15, 2015 (a more recent version was distributed in May 2017) and requests that the County continue to progress toward a full transition to the new geodatabase. MDE is requesting the County implement the geodatabase during this Permit term, however, the County believes that accounting and transitioning to the new geodatabase would be smoother with implementing the next permit. Therefore, as reported in FY19 MS4 Annual Report, the County has not submitted this FY20 MS4 Annual Report using the new geodatabase and will begin progression and full implementation of the new geodatabase format with the reporting of the next permit.

The FY20 urban BMP database has 15,376 records, which is an increase of 751 records (5.1 percent) from the FY19 urban BMP database. Table III.C.1 summarizes the active BMPs by structure type in the urban BMP database.

<b>Table III.C.1. FY20 Total Number of Active SWM BMPs by Structure Type Designation</b>		
<b>Practice Type</b>	<b>Code</b>	<b>Number</b>
Green Roof—Extensive	AGRE	102
Green Roof—Intensive	AGRI	10
Permeable Pavement	APRP	242
Reinforced Turf	ARTF	8
Bioretention	FBIO	477
Organic Filter	FORG	1
Sand Filter	FSND	843
Underground Sand Filter	FUND	790
Infiltration Basin	IBAS	62
Infiltration Trench	ITRN	1,253
Infiltration Berm	MIBR	5
Dry Well	MIDW	5,581
Landscape Infiltration	MILS	119
Microbioretention	MMBR	1,379
Rain Garden	MRNG	175
Rainwater Harvesting	MRWH	51
Submerged Gravel Wetland	MSGW	4
Bioswale	MSWB	261
Grass Swale	MSWG	439

**Table III.C.1. FY20 Total Number of Active SWM BMPs by Structure Type Designation**

Practice Type	Code	Number
Dry Swale	ODSW	53
Other <sup>1</sup>	OTH	754
Extended Detention—Wet	PWED	169
Wet Pond	PWET	64
Extended Detention—Wetland	WEDW	106
Wet Pond—Wetland	WPWS	20
Shallow Marsh	WSHW	3
Extended Detention—Dry	XDED	91
Detention Structure	XDPD	742
Oil-Grit Separator	XOGS	1,511
Structural Control Component for Wet Ponds	XOTH	2
<b>Total Number of Facilities:</b>		<b>15,317</b>

<sup>1</sup> Other includes Hydroguard Separator, underground detention, StormTrap, Snout, Stormchamber, Rainstore, underground with stone bottom.

In FY20, Montgomery County DEP continued to improve on the attribute data for BMP built dates, inspection dates, drainage areas, and IA for 15,376 records. Again, this year, the County included both active and removed BMPs to account for retrofitted BMPs. Records that are inactive are the pre-retrofit BMP records; 59 records are inactive and show a construction purpose of “CONV.” The submission of the inactive BMP records is a result of a discussion with MDE’s Chesapeake Bay Restoration Section. The County was informed that the data submitted as part of the MS4 report are used as inputs to the Chesapeake Bay watershed model, a time-series model that is used to track progress in restoring the Chesapeake Bay. By not accounting for an asset pre- and post-retrofit, the County would lose the pre-retrofit treatment. Therefore, the total number of active BMPs is 15,317, with 59 inactive BMPs, totaling 15,376 records.

Each year, hundreds of new BMPs are added to the County BMP inventory. To ensure data accuracy, DEP has developed a process to rigorously review the attributes of each data point for QA/QC. The urban BMP database is not populated until the attribute data are complete.

The following subsections summarize the data reported in Appendix A, Table B, for this FY20 MS4 Annual Report.

### C.2.a Drainage Area

Drainage area data are provided for the 15,317 active BMPs and 59 removed BMPs. The drainage areas are submitted for the removed BMPs as a reference, in the event MDE would need to analyze the pre- and post-retrofit treatment in detail.

## C.2.b Built Date

Built dates are provided for the 15,317 active BMPs and 59 removed BMPs. This is an important field that is looked at for the Chesapeake Bay watershed model.

## C.2.c Construction Purpose

DEP used this field in FY2020 to provide information on the retrofitted SWM ponds completed for the impervious surface restoration (ISR) requirement. Records marked with “CONV” are for the preretrofit BMPs, and records marked with “REST” are for the retrofitted BMPs; 119 records are marked with “CONV” and “REST.”

## C.2.d Structure Type

For the FY19 urban BMP database, the County transitioned to the new geodatabase BMP types. The MDE structure type designated as “Other” is frequently used by DEP.

## C.2.e Permit Number

The DEP has included a “place-holder permit number” for facilities that were built before 1986 and do not have a permit number. Because many of these facilities were built before the County’s authority to permit such facilities, DEP will not be able to recover a permit number from the paper files. This place holder number is “0000000000” and represents DEP’s final attempt to recover the data from the paper files. All original permit numbers known for the facilities built before 1986 have been entered into the database (typically a six-digit number).

In addition, a 10-digit place holder number beginning with 900118XXXX was also entered for those facilities built prior to 1986. This number was created by Montgomery County DPS for those facilities to be entered into their database system. The DEP has kept this permit number to allow interface with the DPS database. Data are also missing in the permit number field for facilities built after 1986. The remaining 244 are left blank in the case the permit number is discovered.

## C.2.f Runoff Curve Number

The DEP’s new asset and maintenance management system requires a number for all number fields. Those records with a runoff curve number (RCN) of “0” are records where the RCN was not provided in the sediment and erosion control permit records.

## C.2.g Impervious Area

For BMPs that are not located on single-family residential (SFR) lots, where available, Appendix A, Table B provides the gross IA in each facility’s drainage area, regardless of spatial context. These data should not be used to determine the net total IA treated by all BMPs, as reported towards the ISR goal. This dataset does not remove duplicative treatment areas nor consider how well or completely that facility is treating its IAs or any nested or more downstream facilities. Summation of the gross data will result in an inflated and erroneous amount of IA treated.

For SFR properties, the MDE’s Chesapeake Bay Restoration Section informed DEP that the group could not incorporate the treatment provided into the Chesapeake Bay watershed model, because the County

followed the Point of Interest direction and duplicated the property's IA for each BMP on the SFR property as the treatment area. In FY18, the Chesapeake Bay Restoration Section had suggested the data be modified so that the treatment area of all BMPs within a single-family property equals the property's IA. In the FY20 submission, the County has again followed that guidance and have noted the records for easy identification. BMPs located on SFR properties can be identified by "SFR [...]" noted in the GEN\_COMNT field and are each given the property polygon as its drainage area. The property's drainage area (DRAIN\_AREA) and impervious acreage (IMP\_ACRES) values have been split evenly amongst all facilities located on that property.

## C.2.h Last Inspection Date

All 15,317 active BMP records have a last inspection date. Of these, approximately 4,475 SFR facilities do not have an inspection date within the past 3 years due to the County's lack of legal authority to access these properties for inspections. More information on the County's continued efforts and progress on the inspection data provided in the urban BMP database is provided in Section III.E.1.

## C.2.i General Comments

The General Comments (GEN\_COMNT) field is populated with several comments about the BMP data; this field describes the structure type if listed as other (OTH), identifies the SFR BMPs as discussed in Subsection C.2.g above, and includes a comment about the impervious surface treatment credit when the inspection date is not within the past 3 years.

Appendix A, Tables C and D, provide detail on the amount of ISR credit the County is claiming to meet the 20-percent restoration goal. However, the County has several SFR BMPs that have not been inspected in the last 3 years, and some of these BMPs are treating existing impervious surfaces. In the General Comments field, the comment "[...] Restoration Credit Not Taken" indicates when the facility does not have an inspection date within the past 3 years and the impervious surface treatment credit was removed from Appendix A, Tables C and D, for the MS4 Permit ISR crediting purposes. More information about the inspection dates is provided in Section III.E.1, and more information about the impervious surface reduction taken due to these facilities is provided in Section III.G.1.d.

## C.3 Impervious Surfaces

The County's 2009 IAs with associated coverage can be found in Appendix A, Table C. This impervious information was used to develop the County's Coordinated Implementation Strategy. DEP continues to digitize and update IAs for the County's stormwater utility charge, the water quality protection charge. DEP continues to update and digitize the drainage areas of all BMPs.

## C.4 Monitoring Locations

Appendix A, Tables E, E.1, and E.2 provides the GIS coverage and associated attribute information for locations established for chemical, biological, and physical monitoring of watershed restoration efforts required in Section III.H, Assessment of Controls.

## C.5 Watershed Restoration

Appendix A, Table D, provides information about the GIS coverage and associated attribute information for watershed restoration projects proposed, under construction, and completed with associated drainage areas.



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## D. Discharge Characterization

### D. Discharge Characterization

Montgomery County and 10 other municipalities in Maryland have been conducting discharge characterization monitoring since the early 1990s. From this expansive monitoring, a statewide database has been developed that includes hundreds of storms across numerous land uses. Analyses of this dataset and other research performed nationally effectively characterize stormwater runoff in Maryland for NPDES municipal stormwater purposes. These analyses and additional monitoring data required under this permit shall be used by Montgomery County to assess the following: the effectiveness of stormwater management programs, County watershed restoration projects, and to document progress toward meeting waste load allocations (WLAs) included in total Maximum Daily Loads (TMDLs) approved by the U.S. Environmental Protection Agency (EPA) for watershed or stream segments located in the County. Details about this monitoring can be found in PART III.H.

The Permit requires the County to use discharge characterization monitoring gathered since the early 1990s and additional monitoring data required under the Permit to assess the effectiveness of its stormwater management programs and watershed restoration projects. The County must also document progress towards meeting the waste load allocations in U.S. Environmental Protection Agency-approved total maximum daily loads for watersheds or stream segments located in the County. Appendix A, MDENPDES20.accdb, Tables F, G, G.1, G.2, and H, contains discharge characterization results and County progress towards meeting WLAs, and Part III.H, Assessment of Controls presents details about this monitoring

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## E. Management Programs

### E.1 Stormwater Management Programs

#### 1. Stormwater Management

An acceptable stormwater management program shall be maintained in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland. At a minimum, the County shall:

- a. Conduct preventative maintenance inspections of all stormwater management facilities at least on a triennial basis. Documentation identifying the facilities inspected, the number of maintenance inspections, follow-up inspections, the enforcement action(s) used to ensure compliance, the maintenance inspection schedules, and any other relevant information shall be submitted in the County's annual reports.
- b. Implement the stormwater management design policies, principles, methods, and practices found in the *2000 Maryland Stormwater Design Manual* and the provisions of Maryland's *Stormwater Management Act of 2007* (Act). This includes, but is not limited to:
  - i. Within one year of State adoption of regulations required under the Act, modify the County stormwater management ordinance, regulations, and new development plans review and approval processes in order to implement environmental site design (ESD) to the MEP;
  - ii. Within one year of State adoption of regulations required under the Act, review existing planning and zoning and public works ordinances and other local codes to identify impediments to, and opportunities for, promoting the implementation of environmental site design (ESD) to the MEP;
  - iii. Within two years of State adoption of regulations required under the Act, modify those ordinances and codes identified in Part III.E.1.b.ii. above to eliminate impediments to, and promote implementation of, ESD to the MEP; and
  - iv. Report annually the modifications that have or need to be made to all ordinances, regulations, and new development plans review and approval processes to accommodate the requirements of the Act.
- c. Maintain programmatic and implementation information according to the requirements established as part of MDE's triennial stormwater program review.

#### E.1.a Stormwater Management Facility Inspections and Maintenance

##### i. **Inventory and Maintenance Responsibilities for Stormwater Management Facilities**

The Permit requires the County to conduct preventive maintenance (PM) inspections of all stormwater management (SWM) best management practices (BMPs) at least triennially (once every 3 years). The DEP BMP Stormwater Inspection and Maintenance Program (SWIM) oversees inspection and maintenance of all SWM BMPs under County jurisdiction.



The DEP performs structural maintenance on BMPs owned by the County, Montgomery County Public Schools (MCPS), and Maryland National Capital Park and Planning Commission, as well as structural and nonstructural maintenance on environmental site design (ESD) practices located on County property and County right-of-way (ROW). DEP is also responsible for performing structural maintenance on private practices where maintenance responsibility has been transferred to the County (the private property owner remains responsible for nonstructural maintenance). Property owners are responsible for providing all maintenance on ESD BMPs on their property.

The data reported for FY20 represent DEP's inspection and maintenance responsibilities as defined in Montgomery County Code (Chapter 19) and Part III.E.1 of the Permit. The urban BMP database has 15,317 active SWM BMPs and an additional 59 inactive BMPs, which are not inspected (see Part III.C.2). The breakdown of BMP maintenance responsibility and DEP's BMP oversight is as follows:

- A total of 5,498 SWM BMPs are structurally maintained by DEP, of which 2,509 are privately owned (that is, BMPs that serve residential common properties) and 2,989 are publicly owned (that is, BMPs that serve public schools, government, and park properties).
- A total of 9,819 SWM BMPs are privately owned and structurally maintained by the private property owners; DEP's program ensures and enforces maintenance for these BMPs, of which over 6,214 are privately owned ESD practices on single-family lots.

## ii. Stormwater Management Best Management Practice Inspections

The DEP oversees inspection of all SWM BMPs both publicly and privately owned, under County jurisdiction. Inspections that are tracked and reported in the MS4 Annual Report include triennial inspections; annual inspections for certain BMPs; water quality protection charge (WQPC) inspections by single-family residential (SFR) property owners for WQPC credit; unscheduled inspections for compliance, enforcement, and in response to complaints; and maintenance inspections.

During FY20, 8,925 inspections were conducted by DEP staff and the triennial inspection contractor. Table III.E.1 summarizes the inspections conducted from July 1, 2019 to June 30, 2020.

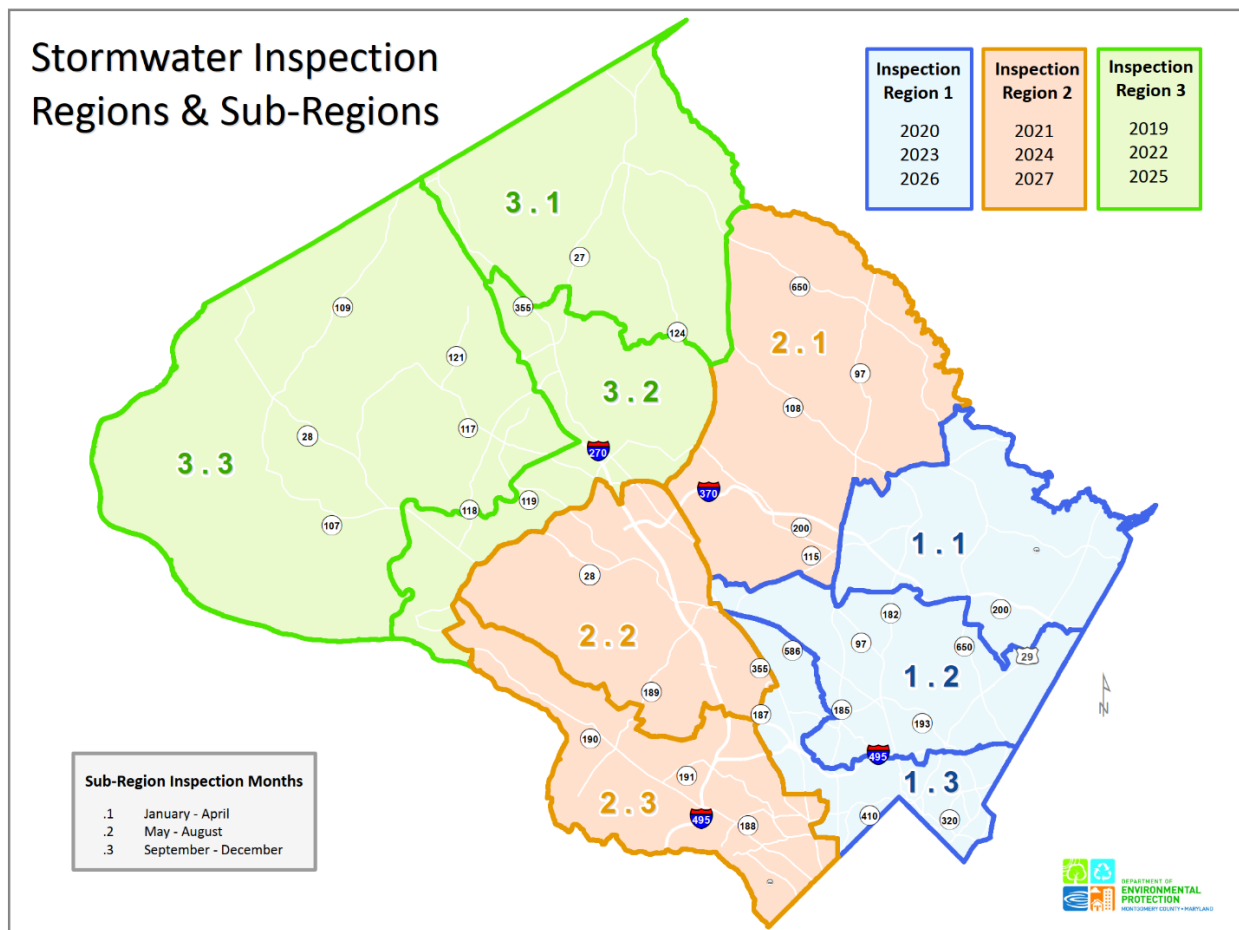
<b>Table III.E.1. Inspections Completed during FY20</b>	
Triennial inspections <sup>1</sup>	2,979
Annual dam safety inspections	6
WQPC self-inspection and WQPC application audits	172
Aboveground BMP maintenance inspections	1,750
Underground BMP maintenance and repair inspections	1,442
ESD BMP non-SFR maintenance inspections	2,572
Unscheduled inspections	4
<b>Total inspections completed:</b>	<b>8,925</b>

<sup>1</sup> Table III.E.2 breaks down triennial inspections.

(a) *Triennial Inspections*

Between July 1, 2019 and June 30, 2020, 2,979 triennial inspections were completed by DEP staff or by DEP's inspection contractor. The purpose of the triennial inspections, which are conducted under DEP's triennial inspection contract, is to identify repair and maintenance needs. The County is divided into three geographical regions for triennial inspections, and each geographical region is divided into three subregions (Figure III.E.1). Fiscal reports will always include inspection and maintenance information for two regions because DEP schedules work on a calendar year. Table III.E.2 breaks down the total number of triennial inspections completed in Regions 3 and 1 between July 2019 and June 2020.

In Calendar Year (CY) 2018 and beginning in Region 3, DEP modified its method of releasing inspection work to the inspection contractor. Previously, DEP released work monthly based on assigned PM schedules, managed through the Infor Asset Management System. For CY19, DEP updated all asset PM schedules so that all inspection work in each subregion is released at one time, with a total of three work releases per year. The inspection contractor now has the flexibility to schedule their work more closely related to geographic location, resulting in increased efficiency.



**Figure III.E 1. Stormwater Facility Inspection Regions**

<b>Table III.E.2. Triennial Inspections Completed during FY20 for Regions 1 and 3</b>	
<b>Inspection Type</b>	<b>Total</b>
ESD <sup>1</sup>	1,027
Filtering systems <sup>2</sup>	582
Stormwater infiltrations <sup>3</sup>	266
Oil/grit separators	271
Proprietary hydrodynamic <sup>4</sup>	200
Stormwater ponds <sup>5</sup>	430
Underground storage	144
Stormwater wetlands	50
Open channel systems <sup>6</sup>	6
Other <sup>7</sup>	3
<b>Triennial Inspections Completed during FY20:</b>	<b>2,979</b>

<sup>1</sup> Includes bioretention and all ESD practices in Chapter 5 of the Maryland Stormwater Design Manual (MDE 2009).

<sup>2</sup> Includes all aboveground and underground sand filters and proprietary filters such as StormFilters.

<sup>3</sup> Includes trenches.

<sup>4</sup> Includes BaySaver, Stormceptor, Vortechs systems, and other proprietary hydrodynamic devices.

<sup>5</sup> Includes all dry and wet ponds and ponds with extended detention.

<sup>6</sup> Includes dry swales and bioswales.

<sup>7</sup> Includes all other types of devices.

*(b) Triennial Inspection of Environmental Site Design Best Management Practices*

During FY20, DEP inspected 1,027 ESD practices (Table III.E.2); these practices were located primarily on nonresidential and public property. In July 2010, when ESD was first required by Montgomery County Code, the County did not require easements on SFR properties that would allow the County access to perform inspections of permitted ESD BMPs. In 2016, DEP worked with the Department of Permitting Services (DPS) to require right-of-entry and maintenance agreements for all SWM BMPs constructed under all new sediment and erosion control permits. DPS began requiring the easements for ESD on SFR properties on January 1, 2017. However, many permits were approved before January 1, 2017, including a large number (that is, more than 5,800) of existing ESD BMPs on SFR lots where DEP has no legal access via an easement to conduct inspections. Projects permitted before the easement requirement are still being completed through the permitting process, and the associated BMPs still being brought into DEP's inventory.

The total number of ESD BMPs added to DEP's urban BMP database also presents a challenge. Since 2010, DEP has added more than 10,000 ESD BMPs on public and private property to the Infor Asset Management System. DEP is responsible for inspecting these BMPs triennially. DEP's inspection program is continuing to work to develop both contractual and staff capacity to accomplish the required inspections.

DEP has taken the following actions to address triennial inspections of ESD BMPs on commercial, SFR, other residential properties (for example, homeowner association properties), and public properties:

- Since FY16, DEP included inspections of the ESD practices on properties other than SFR found in Chapter 5 of MDE's *Maryland Stormwater Design Manual* in the triennial inspection program. During FY20, 1,027 ESD BMPs received a triennial inspection. Future FYs will show increasing numbers of ESD inspections as DEP and the contractor expand capacity.
- DEP included a FY18 budget request for two new ESD program managers that will develop the programs needed to accommodate the rapid growth of ESD BMPs. Both program managers were approved during FY18. The first program manager was hired in FY19 and is responsible for maintaining ESD BMPs on publicly owned properties. The second program manager was hired in FY20 and will develop a program to inspect more than 6,400 ESD BMPs on private property, most of which are SFR lots.
- During FY16, to document inspections for ESD BMPs on SFR for which there is no right-of-entry, DEP developed and piloted an online self-inspection form, allowing property owners to claim credit against their WQPC for any ESD BMPs on their property. Although these inspections are listed under WQPC Self-Inspection and WQPC Application Audits in Table III.E.1, DEP considers self-certification to be equivalent to a triennial inspection. The online inspection form also provides ESD BMP maintenance information.

The self-inspection form is tied to the County's WQPC program, making it easy for the owner to apply for a credit at inspection time. DEP plans to continue to work with property owners to provide resources to help them perform yearly inspections and required maintenance on the ESD facilities on their property. DEP recommends owners inspect their ESD facilities annually and perform maintenance as necessary.

During FY20, to promote participation in the WQPC credit self-inspection program, DEP sent 1,425 postcards with WQPC credit program information to SFR property owners with ESD facilities; 98 owners completed the WQPC credit application and inspection report, which represented a 7-percent response rate to the postcards. The responses resulted in 98 ESD BMPs having an approved WQPC credit inspection. During FY20, DEP continued a multifaceted outreach and education program promoting the WQPC credit program and SFR ESD inspections, including postcard mailings, on-site credit application processing, and a series of outreach do-it-yourself ESD maintenance videos for residential property owners.

- During FY20, DEP continued the audit effort involving site visits to verify asset maintenance condition in the WQPC self-inspection program. The goal of this effort was to conduct annual audits of 10 percent of the approved applications for the credits granted in the prior Levy Year (LY). For the FY20 audits, approved credit applications for LY19 (credited applications) included 173 applications. Applications were submitted on a property basis, and each property may have more than one BMP; 46 of the approved applications (properties) were selected for audit, which included 165 assets (BMPs). Of these applications, 25 properties were not accessible for site visits due to conditions such as gated fences or unavailable property owners; this resulted in an actual audit of 21 properties containing 74 assets, with an audit rate of 12-percent of total applications. The 74 assets covered under the 21 approved applications, which were inspected and combined with 98 self-inspections, resulted in 172 WQPC self-inspections and WQPC application audits.

(c) Other Types of Inspections

DEP conducts other SWM BMP inspections outside of the triennial inspection program, including inspections in response to public complaints, facilities being considered for transfer into DEP's SWIM



program, and those needing assessment after large storm events. DEP inspection staff also performed unscheduled and compliance follow-up inspections for privately maintained facilities as needed to ensure that BMPs are functioning properly and maintained as required by the Permit.

For BMPs maintained by DEP, maintenance and repair work was completed by contractors. DEP staff conducted maintenance inspections to ensure that the contractor's work was performed correctly and in accordance with contract specifications. During FY20, DEP staff conducted over 5,700 unscheduled and maintenance inspections; these inspections were conducted to evaluate DEP's maintenance contractor's performance and to investigate issues identified by residents of the County.

*(d) Triennial Inspections and the Urban Best Management Practice Database*

During FY20, 2,979 SWM BMP triennial inspections were completed. DEP worked to ensure all BMPs had a valid inspection date. The number of inspections must increase annually, because hundreds of BMPs are added to the Infor Asset Management System each year. The urban BMP database (Appendix A, Table B) was generated in January 2021 and includes inspection data through January 2021. The inspection date field within the urban BMP database includes triennial inspections, WQPC credit inspections, unscheduled inspections, maintenance inspections, and inspections conducted by DPS as of January 2021.

A total of 10,828 active BMPs have been inspected within the last 3 years of this reporting period (2018 through 2020). However, the urban BMP database also shows that 4,489 BMPs have not had an inspection within the last 3 years (since 2017). Most of these BMPs (4,475) are ESD practices on SFR properties. The remaining 14 BMPs are due for inspection in 2021 and will report a valid inspection date for the FY21 MS4 Annual Report. The 4,475 SFR ESD BMPs that do not have an inspection date within the last 3 years have a note in the general comment field indicating "SFR; Restoration Credit Not Taken." After a BMP is inspected, the restoration credit will be included in Appendix A, Tables C and D. Information about this comment is provided in Section III.C.2.i.

**iii. Stormwater Management Facility Maintenance**

In addition to inspections, the DEP SWIM Program oversees structural and nonstructural maintenance of all SWM BMPs under the County's jurisdiction. During FY20, 5,198 maintenance and/or repair work orders were completed, either by DEP contractors or by the facility owner (Table III.E.3). All maintenance was performed under the guidance of DEP inspection staff who conduct follow-up inspections of both privately and DEP-maintained facilities to ensure that the repair work is completed, and routine cleaning and maintenance has been conducted.

Table III.E.3. Stormwater Facility Repairs and Maintenance during FY20	
Type of Facility	Work Orders
<b>Privately owned and maintained</b>	
Aboveground, including ESD	585
Underground	351
<b>Total number of privately owned facilities maintained by owner</b>	<b>936</b>

**Table III.E.3. Stormwater Facility Repairs and Maintenance during FY20**

Type of Facility	Work Orders
<b>DEP maintained</b>	
Aboveground structural practices	580
Mowing and trash removal	13
Underground structural practices	1,090
ESD routine maintenance	2,529
ESD repaired	50
<b>Number of facilities maintained by DEP during FY20</b>	<b>4,262</b>
<b>Total number of facilities maintained during FY20 (owner and DEP)</b>	<b>5,198</b>

(a) Privately Owned and Maintained Aboveground Best Management Practices

During FY20, 585 aboveground BMPs were privately maintained. DEP conducted a final inspection for each facility to ensure that they were complying and properly functioning. DEP issued 377 notices of violations (NOVs) requiring deficiencies noted during triennial inspections to be corrected. Of the 377 NOVs, 282 facilities with a “high” or “emergency” maintenance need level were maintained by the private owner. DEP also transmitted 84 routine maintenance notification letters to property owners in FY20. Inspectors conducted approximately 1,170 follow-up inspections to ensure compliance with the NOVs and notices issued by DEP.

(b) Privately Owned and Maintained Underground Facilities

During FY20, 351 underground facilities were privately maintained. Any repairs identified during the triennial inspections were required to be completed at the same time. DEP issued four NOVs for maintenance and repair of privately owned underground facilities. Inspectors conducted approximately 36 follow-up inspections on the underground facilities to ensure compliance with the NOVs and notices issued by DEP.

During FY19, DEP modified their notification procedure to private underground BMP property owners. To conduct a triennial inspection of an underground SWM facility, the property owner/manager had to first hire a cleaning contractor to pump out and clean the facility. Triennial inspections with confined space entry can only be completed when the facility was clean and clear of water. In previous years, maintenance notices were released and mailed to responsible property owners/managers each month, with a 45-day timeframe for compliance. Private property owners/managers needed more time to coordinate cleaning and funding maintenance, and as a result, several NOVs were issued to otherwise compliant property managers. During January of CY19, DEP notified all underground facility property owners/managers in the inspection region that a triennial inspection was due that year for their facility. The owners/managers then had time to coordinate and schedule the needed cleaning, and as a result, fewer compliance actions were necessary in CY19 and CY20.

(c) DEP-Maintained Aboveground Best Management Practices

During FY20, DEP used a general contractor to structurally maintain 580 aboveground SWM facilities. This number included all repairs identified during the triennial inspections and involved removing minor sediment accumulations, unblocking clogged low flows, completing minor concrete repairs, making erosion repairs, restoring and/or replenishing media, and removing debris. Thirteen ponds had regular mowing and monthly trash removal performed by DEP contractors.

(d) DEP-Maintained Underground Facilities

During FY20, DEP cleaned and repaired 1,090 underground facilities. Of these facilities, three Stormceptors located at the Shady Grove Transfer Station were maintained three times, and three BaySavers at a bus depot were maintained six times.

(e) DEP-Maintained Environmental Site Design Best Management Practices

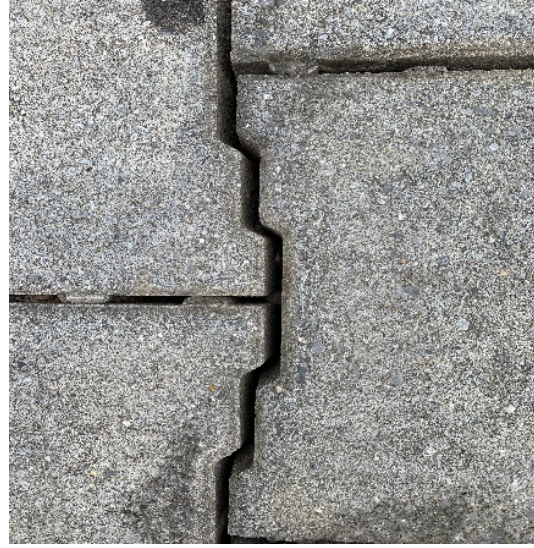
During FY20, DEP continued conducting monthly maintenance of ESD facilities on County property, including facilities constructed through the Watershed Restoration Program. These facilities include those constructed in roadway ROWs within neighborhoods (“Green Streets”) and those constructed on County-owned properties, such as recreation centers and libraries. DEP’s contractor for routine maintenance of aboveground SWM facilities conducts monthly maintenance, and they performed more than 2,500 maintenance visits during FY20 and repaired 50 ESD facilities. In addition, 16 green roofs at 9 locations on County buildings were maintained quarterly by DEP green roof contractor. The contractor’s maintenance approach utilizes sound horticultural science regarding soil health, which eliminates the need for nonorganic chemicals and fertilizers and optimizes plant health, vigor, and coverage and results in low weed pressure. All green roofs are considered in outstanding condition.

(f) Pervious Pavement Maintenance

During FY20, DEP worked with the County Department of Transportation (DOT) to issue a task order for a DOT maintenance contract to vacuum 302,826 square feet of pervious pavement (concrete and PaveDrain) at several County-owned buildings, sidewalks, and parking pads in the ROW. Inlets associated with the PaveDrain were cleaned in all 22 locations. A new approach to PaveDrain maintenance included using an air space to remove debris clogging the open joint system; this was an efficient and cost-saving approach to cleaning this specific type of pervious pavement. These facilities are functioning properly, and the partnership between DEP and DOT has eased ongoing maintenance.



***Figure III.E.2a. PavéDrain (Sligo Park Hills) before Cleaning***



***Figure III.E.2b. PavéDrain (Sligo Park Hills) after Cleaning***

***(g) Environmental Site Design Renovations***

During FY20, DEP renovated several “Green Street” BMPs in the White Oak community. The new planting approach offers increased pollinator benefit, stormwater control, and beautification with four seasons of interest. This dense planting also reduced the open space between plants for decreased weed invasion and maintenance efforts.



***Figure III.E.3a. White Oak LID “Green Street” before Redesign Comprising Primarily Grasses***



***Figure III.E.3b. White Oak LID “Green Street” after Redesign with Increased Plant Diversity and Aesthetics***



#### iv. Co-Permittee Structural and Nonstructural Maintenance

MCPS Division of Maintenance upgraded and repaired existing underground and aboveground stormwater facilities in FY20. MCPS staff performed some nonstructural maintenance on aboveground stormwater facilities and contracted the remaining work. Maintaining 318 bioretention facilities and 1,172,369 square feet of green roof on MCPS facilities was contracted out.

#### E.1.b Stormwater Management Design, Plan Review, and Permitting

The Permit requires the County to maintain programmatic and implementation information according to the requirements established as part of the MDE triennial stormwater program review. DPS is responsible for implementing the programmatic requirements for the SWM plan review and permitting. Table III.E.4 provides details about the number of reviews and approvals during FY20.

Notably, local SWM requirements are stricter than state minimum standards in certain ways. For example, MDE standards include an SWM exemption for projects that disturb fewer than 5,000 square feet, while DPS requires sediment control and SWM to be addressed for any new home or commercial building construction regardless of the disturbance area; this undoubtedly accounts for many the SWM waivers issued by DPS during FY20 and subsequent years, especially for SFR teardown projects that may not have otherwise been required to address SWM. Likewise, DPS did not follow the state standard for reducing SWM compliance for redevelopment projects when it incorporated ESD into the Montgomery County Code. Instead, DPS requires redevelopment projects to address ESD to the maximum extent practicable (MEP); this approach, while generally successful in obtaining ESD compliance on most projects, can be expected to generate additional waivers due to limitations of existing site conditions, such as poor soils and shallow receiving storm drain systems.

**Table III.E.4. Permits and Plan Review during FY20**

Approved concept designs	94
Site development	1
Final plans <sup>1</sup>	654
Redevelopment	32
Waivers <sup>2</sup>	173

<sup>1</sup> Total sediment control plan approvals within the fiscal year is based on unique grading permit number and includes permits issued for SWM concept applications submitted in prior years, multiple permits under the same concept file number, and projects for which a separate stormwater conceptual submission is not required.

<sup>2</sup> Total includes full and partial waivers for residential and non-residential projects, including teardown and rebuild of existing SFR homes on existing recorded lots for which a separate stormwater concept submission is not required. Many residential rebuilds require at least a partial waiver of stormwater requirements. Whether or not a waiver is granted, all must provide ESD to the MEP on the lot. Teardown and rebuild on existing SFR lots accounted for all but 16 waivers issued during FY20.

## E.2 Erosion and Sediment Control

### 2. Erosion and Sediment Control

An acceptable erosion and sediment control program shall be maintained in accordance with the Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland. At a minimum, the County shall:

- a. Implement program improvements identified in any MDE evaluation of the County's application for the delegation of erosion and sediment control enforcement authority;
- b. At least three times per year, conduct responsible personnel certification classes to educate construction site operators regarding erosion and sediment control compliance. Program activity shall be recorded on MDE's "green card" database and submitted as required in PART IV of this permit; and
- c. Report quarterly, information regarding earth disturbances exceeding one acre or more. Quarters shall be based on calendar year and submittals shall be made within 30 days following each quarter. The information submitted shall cover permitting activity for the preceding three months.

Permit Section III.E.2 requires the County to maintain an acceptable erosion and sediment control (ESC) program that includes implementing improvements identified in MDE's biennial evaluation of the County's ESC program. The Permit also requires the County to conduct responsible personnel certification classes to educate construction site operators about ESC compliance and report quarterly information about earth disturbances exceeding 1 acre.

### E.2.a Evaluation of County Application for Delegation of Erosion and Sediment Control Enforcement Authority

#### i. **No Improvements Required by MDE Evaluation of County Delegation**

MDE biennially evaluates the County's ESC program as part of its review of the County's application for the delegation of ESC enforcement authority starting on December 12, 2019. MDE opted not to perform on-site visits for jurisdictions that have been performing well. Continued delegation was granted through June 30, 2022 by a letter from Raymond P. Bahr, Deputy Program Manager of MDE's Water and Science Administration. In a letter dated June 5, 2020 (provided as part of Appendix F), MDE "also determined the County's program is in compliance with the erosion and sediment control program requirements of its municipal separate storm sewer system (MS4) permit." MDE did not identify any improvements that the County was required to make in its ESC program.

#### ii. **Description of County Erosion and Sediment Control Program**

DPS is responsible for implementing the County's ESC program. The ESC program goal is to reduce pollutant loads from new developments and redevelopments during construction. The County employs inspection and enforcement actions by issuing violation notices and stop-work orders to enforce compliance with ESC programs. Following are elements of the ESC program:

- Reviewing the grading permit applications for earth disturbance
- Inspecting and enforcing grading and ESC regulations

- Conducting compliance investigations
- Reporting earth disturbances exceeding 1 acre
- Providing training for certification of responsible personnel

### iii. Inspection and Enforcement Actions

Table III.E.5 details the ESC inspections and enforcement actions taken by DPS in FY20.

<b>Table III.E.5. ESC Program Enforcement Actions for FY20</b>	
Total ESC inspections	14,874
<b><i>Enforcement Actions</i></b>	
Number of NOVs	269
Number of stop-work orders	45
Number of civil citations	63
Civil citation fines collected	\$34,800

Table III.E.6 summarizes the County's ESC Inspection and Enforcement Program over the Permit term. While the COVID-19 pandemic did cause a decline for FY20 projects, larger projects have been closed out, which has translated into fewer inspections.

<b>Table III.E.6. Summary of County's ESC Program Enforcement Actions over the Permit Term (FY11 through FY20)</b>											
	<b>FY11</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15</b>	<b>FY16</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>Total</b>
Inspections	13,472	11,191	12,439	18,151	20,793	20,152	17,120	17,488	16,789	14,874	162,469
NOVs	343	248	235	520	511	424	355	250	396	269	3,551
Citations	146	105	103	160	162	115	137	71	75	45	1,119
Fines collected	\$43,926	\$55,750	\$67,000	\$82,350	\$94,955	\$96,350	\$41,855	\$47,550	\$41,225	\$34,800	\$605,761

## E.2.b Responsible Personnel Certification

During 2016, MDE developed an online Responsible Personnel Certification (RPC) program that provides personnel with convenient training that can be scheduled by the individual staff member. Because MDE conducts RPC training online, and according to its own correspondence, training-related data are no longer reported in this report.

## E.2.c Quarterly Grading Permits

Appendix A, Table K, Quarterly Grading Permit Information, includes quarterly grading permit information for earth disturbances in the County measuring 1 acre or greater.

## E.3 Illicit Discharge Detection and Elimination

### 3. Illicit Discharge Detection and Elimination

The County shall implement an inspection and enforcement program to ensure that all discharges to and from the municipal separate storm sewer system that are not composed entirely of stormwater are either permitted by MDE or eliminated. At a minimum, activities shall include:

- a. Field screening at least 150 outfalls annually. Each outfall having a discharge shall be sampled using a chemical test kit. Within one year of permit issuance, an alternative program may be submitted for MDE approval that methodically identifies, investigates, and eliminates illegal connections to the County's storm drain system;
- b. Conducting routine surveys of commercial and industrial areas for discovering and eliminating pollutant sources. Areas surveyed shall be reported annually;
- c. Maintaining a program to address illegal discharges, dumping and spills;
- d. Using appropriate enforcement procedures for investigating and eliminating illicit discharges, illegal dumping, and spills. Significant discharges shall be reported to MDE for enforcement and/or permitting; and
- e. Reporting illicit discharge detection and elimination activities as specified in PART IV of this permit.

The MS4 Permit requires the County to implement an inspection and enforcement program to ensure all non-stormwater discharges to and from the MS4 that do not comprise entirely stormwater are either permitted by MDE or eliminated.

### E.3.a. Outfall Screening

The Permit requires field screening at least 150 outfalls annually, with field water chemistry analysis of dry-weather discharges according to parameters specified in the Permit's Attachment A, Annual Report Databases, Part I: Illicit Discharge Detection and Elimination. The outfall screening process aims to identify, investigate, and eliminate illegal connections to the County's storm drain system.

#### i. Approach to Outfall Screening

Beginning in FY11, Montgomery County DEP began using a comprehensive approach to outfall screening that includes walking all stream reaches within a targeted watershed. This approach has developed into screening outfalls each year in a different region of the county, with regions rotating every year and targeting outfalls near commercial and industrial properties. The areas screened during FY20 were in the south-central region of Montgomery County, predominantly in and around Bethesda and Chevy Chase. Watersheds (Maryland 12 Digit Code) screened included Rock Creek D.C. (021402060831), Lower Rock Creek (021402060836), Little Falls Branch (021402020844), Cabin John Creek (021402070841), and Northwest Branch – Bel Pre Creek (021402050827). All suspicious discharges are investigated upon initial discovery and follow-ups should occur within 2 weeks of initially discovering the suspicious discharge (weather permitting).

All outfalls encountered are categorized, documented, and sampled when dry-weather flow is found. Outfalls with no flow are assessed for physical indicators such as pipe benthic growth, corrosion, algae, and structural issues. Outfalls found not currently listed in the County's inventory are assigned identification (ID) numbers in the field, photographed, and their location is marked with a global positioning system point. The ID numbers and pertinent data are forwarded to the DEP geographic information system (GIS) team for inclusion in the ArcMap storm drain outfall layer. This method has allowed DEP to document and add more than 913 new outfall points to its GIS storm drain layer since FY11. Additionally, numerous structures, such as road and driveway culverts, that were mistakenly identified in the system as outfalls were corrected.

## ii. Outfall Screening Results in FY20

During March through June 2020, the DEP's Energy, Climate, and Compliance Division (DECC) screened outfalls near commercial and industrial areas in Bethesda, Kensington, and Chevy Chase in the south-central region of Montgomery County. These areas are located within the Rock Creek, Little Falls, Cabin John, and Northwest Branch – Bel Pre Creek Watersheds (Figure III.E.4). The outfalls screened during FY20 are in Appendix A, Table I.

During FY20, DECC screened a total of 156 targeted outfalls, 19 of those being newly identified outfalls that were previously not mapped in the inventory. Of the 156 outfalls screened, 46 outfalls were found with dry-weather flows. Errors in outfall location or type as shown on the existing maps were reported and will be corrected in the GIS inventory. The 19 new outfalls identified will be added to the existing maps. Figure III.E.4 shows the locations of the priority outfalls that were screened during the FY20 Illicit Discharge Detection and Elimination (IDDE) screening program. Appendix G includes a copy of the storm drain outfall screening and monitoring online application form.

Of the 46 outfalls with dry-weather flows, five had suspicious discharge. Of those five, one was caused by natural conditions, and four required further investigation (Table III.E.7). Of those four, two showed no further suspicious discharge, one had its source traced to a stormwater facility and the issue was referred to the DEP stormwater inspection and maintenance program, which scheduled facility cleaning, and one had its discharge traced to a sediment control pond for the Purple Line construction project and was repaired. The remaining 41 outfalls that had dry-weather flow during the initial visit did not exhibit abnormal water chemistry parameters, visual characteristics, odor issues, or unusual vegetative growth and were, therefore, classified as groundwater discharge.

Table III.E.8 summarizes DEP's IDDE program during the Permit term. From FY11 to FY20, DEP conducted 1,654 outfall assessments by walking the entire reach of waterbodies in four separate subwatersheds and targeting outfalls near commercial and industrial areas to identify and eliminate pollutant sources in those areas.

Table III.E.7. Investigation Results of Suspected Illicit Discharges During FY20			
Outfall ID	Location	Problem Found	Resolution
HP562P9529	2555 Holman Avenue	Elevated phenols	High naturally occurring iron bacteria was found nearby causing elevated phenol level.

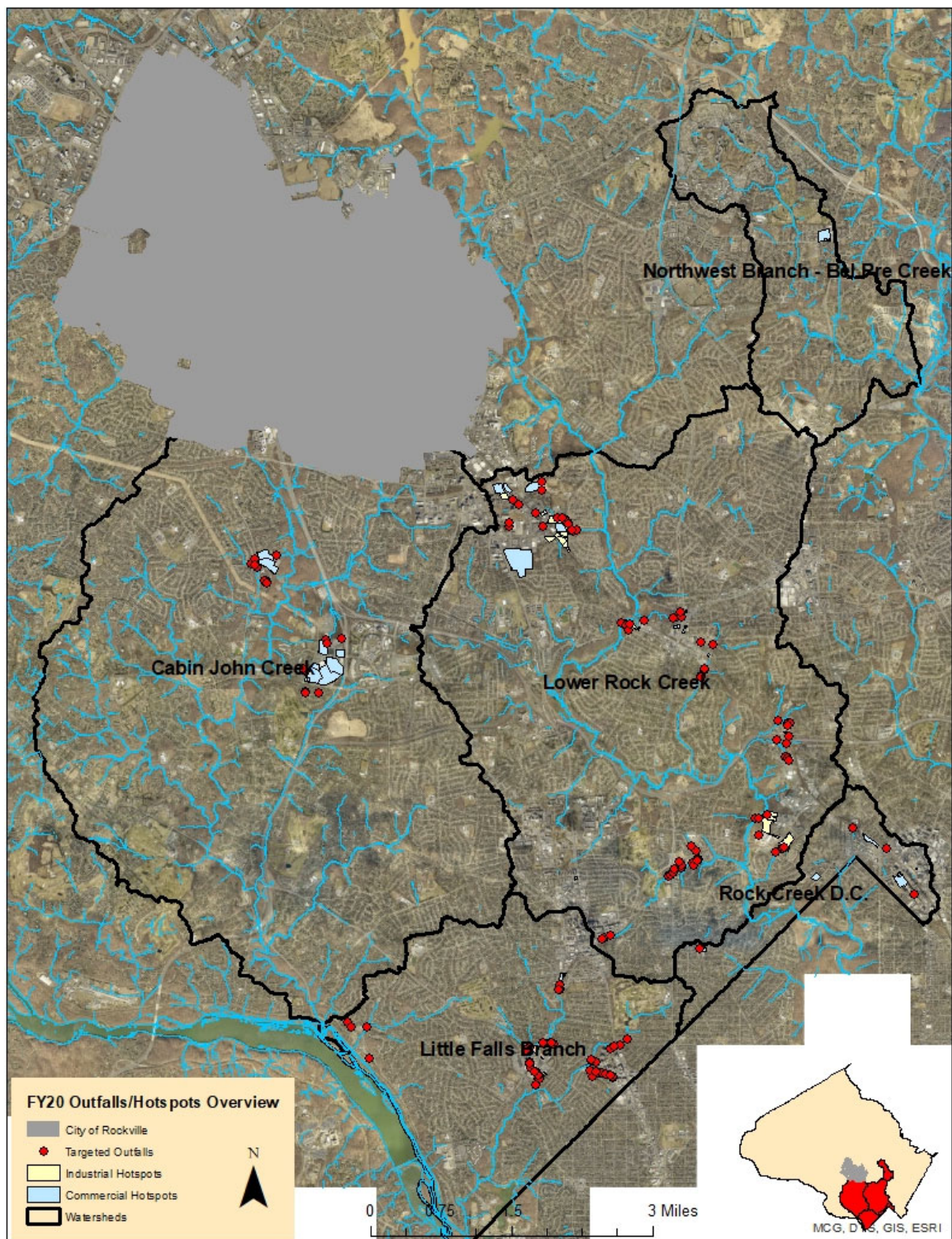


**Table III.E.7. Investigation Results of Suspected Illicit Discharges During FY20**

<b>Outfall ID</b>	<b>Location</b>	<b>Problem Found</b>	<b>Resolution</b>
HQ341P0517	Ken Gar Palisades Park	Elevated detergents	Initial investigation found elevated detergents with iron bacteria present as well as a stream restoration project upstream. Subsequent visits found all water-quality parameters to be non-detect with no issues.
HP562P6408	2800 Hume Drive	High conductivity	High conductivity was traced to stormwater facility. Issue were referred to DEP Stormwater Inspection Group and is scheduled to be cleaned.
HM123P6488	5100 Ridgefield Road	Elevated detergents	Initial investigation traced the flow source to shopping center Westwood Center, but no sources were found. Several subsequent visits found all water-quality parameters to be non-detect with no issues.
HN563P0354	8619 Grubb Road	Excessive sediments	During inspection, 4 inches of excess sediment were found in outfall pipe. Sediment source was traced to Purple Line construction project; the construction site fixed issue and added inlet protection.

**Table III.E.8. Summary of Illicit Discharge Detection and Elimination during the Permit Term (FY11 through FY20)**

	<b>Outfalls</b>	<b>Total (percent)</b>
Total outfall assessments	1,654	--
Unmapped outfalls discovered	913	55.2
Outfalls with dry-weather flow	246	14.9
Illicit discharge investigations	100	6.0
Illicit discharges eliminated	27	1.6



**Figure III.E.4. Locations of the FY20 IDDE Screening Targeted Outfalls and Targeted Hotspots**  
*Note: DEP does not screen outfalls in Rockville.*

### iii. WSSC Sanitary Sewer Overflow Follow-Up Investigations

DEP is continuing to work with Washington Sanitary Sewer Commission (WSSC) by performing follow-up site visits for reported sanitary sewer overflows (SSOs) in the County and performed 48 site visits in FY20. These follow-up site visits verify that SSOs have been corrected, ensure all affected areas have been adequately treated and cleaned up, and ensure adequate public notice signage has been posted in affected areas. Also, DEP is continuing to work with WSSC's fats, oils and grease program regarding restaurant grease issues, which directly affect stormwater quality in the County.

## E.3.b Routine Pollutant Surveys of Commercial and Industrial Areas

### i. Procedures for Conducting Pollutant Surveys of Commercial and Industrial Areas

The Permit requires the County to conduct routine surveys of commercial and industrial areas to assess the potential for, and eliminate if discovered, pollutant sources. DEP conducted 47 hotspot surveys of commercial and industrial sites as part of the comprehensive IDDE program in FY20. In addition, DEP selected areas for outfall screening based on results of the pollutant surveys of commercial and industrial areas, which are detailed in the following subsections. Appendix G includes the documentation for these procedures.

#### (a) Commercial and Industrial Survey Area Selection Process

A GIS spatial database engine (SDE) property layer is maintained and managed by the Montgomery County Department of Technology Services. DEP uses GIS to research the "Land Use Codes" field in "SDE.Property" layer related to commercial and industrial properties. Appendix G includes a table presenting the land use codes, including their descriptions and pollutant potentials.

Properties containing restaurants, vehicle repair and fueling businesses, and industrial are classified as high-priority sites. In addition, sites located within 100 feet of a storm drain inlet are given additional priority ranking. The search of the current GIS SDE property layer showed a total of 2,103 sites (566 industrial and 1,537 commercial sites). Of the 2,103 total industrial and commercial sites, 1,193 are located within 100 feet of a storm drain inlet.

#### (b) Equipment Needed for Commercial and Industrial Surveys

- Site information packet (see Section [c] Commercial and Industrial Survey Process for details)
- Paper or iPhone/iPad with Hotspot Assessment Form (HSAF)
- Storm drain test kit
- Manhole hook(s)
- Flashlight
- Long-handle dipper
- Spill absorbent, spill pads, and spill boom
- Hard hat, safety boots, gloves (leather and chemical resistant), safety glasses, and safety vest

(c) Commercial and Industrial Survey Process

Routine surveys of commercial and industrial areas for assessing and eliminating potential pollutant sources involve the following steps:

- Prepare site information packet to include aerial map showing the local storm drain system and surface water features; research nearby outfalls to determine whether they are appropriately identified and mapped (if not identified in the system, then the staff member will need to complete the applicable outfall screening process); complete HSAF form (paper or iPad PDF); research results of complaint database and any previous local outfall screening activities; and document research if the facility has a general or specific NPDES Permit issued by MDE, notice of violation (NOV) form and Civil Citation booklet, and a copy of Montgomery County Code, Chapter 19, Water Quality Control Ordinance.
- With the permission of the senior facility representative on site (if necessary), walk the site and check all areas noted on the HSAF, paying particular attention to observing, photographing, and documenting any issues that could result in illicit discharge of pollutants to the storm drainsystem.
- Immediately report issues to the facility representative on site stressing that corrective actions are required as soon as possible, or enforcement action can be taken.
- When the survey is completed, open a case in CaseBase (DEP database system), link the HSAF in the documents tab, and enter all actions, documents, and photographs.

For issues that require correction, DEP staff follow up to ensure corrective actions have been completed. If unresolved actions remain, then the staff member will issue the appropriate enforcement action requiring compliance within a reasonable period of time.

**ii. Results of the Commercial and Industrial Surveys**

The Permit requires the County to routinely survey commercial and industrial areas to identify and eliminate pollutant sources and report those surveys annually. During FY20, DEP performed 47 hotspot surveys of properties located in commercial and industrial areas primarily in Kensington, Bethesda, and Chevy Chase. The surveys resulted in the enforcement actions listed in Table III.E.9.

Based on the hotspot surveys, DEP investigated water-quality issues and related cases, which resulted in 11 NOVs, 1 warning letter, and 5 verbal warnings; no citations were issued during FY20. The formal enforcement actions are summarized in Table III.E.9, and the entire list of investigated issues is provided in Appendix G.

<b>Table III.E.9. Summary of Stormwater Discharge Enforcement Cases Based on Commercial and Industrial Survey Results for FY20</b>				
<b>Case No.</b>	<b>Location Description</b>	<b>Issue</b>	<b>Enforcement Action</b>	<b>Resolved</b>
20201021	BP Gas Station	Solid waste	Verbal warning	Yes
20201129	Blair Shops	Grease	NOV	Yes



<b>Table III.E.9. Summary of Stormwater Discharge Enforcement Cases Based on Commercial and Industrial Survey Results for FY20</b>				
<b>Case No.</b>	<b>Location Description</b>	<b>Issue</b>	<b>Enforcement Action</b>	<b>Resolved</b>
20201130	Buena Vida Restaurant	Grease	NOV	Yes
20201132	Rock Creek Shopping Center	Grease	NOV	Yes
20201133	La Ferme Restaurant	Grease	Written notice	Yes
20201333	China Gourmet Bistro	Grease	NOV	Yes
20201333	Shake Shack	Grease	NOV	Yes
20201333	Cava Mezze Grill	Grease	NOV	Yes
20201333	Sisters Thai	Grease	NOV	Yes
20201333	Le Pain Quotidien	Grease	NOV	Yes
20201333	Attman's Delicatessen	Grease	NOV	Yes
20201333	Broadway Pizza	Grease	NOV	Yes
20201333	California Tortilla	Grease	NOV	Yes
20201334	Hughes Landscaping	Water leak	Verbal warning	Yes
20201370	Exxon Gas Station	Solid waste storage	Verbal warning	Yes
20201376	Jiffy Lube	Solid waste storage	Verbal warning	Yes
20202018	Pool Tek	Solid waste storage	Verbal warning	No

### E.3.c Program to Address Illegal Discharges, Dumping, and Spills

During FY20, the County met Permit requirements to maintain a program to address and respond to illegal discharges, dumping, and spills. Information on illegal dumping can be found on the County's website.<sup>1</sup>

The County maintains a 311 call service center<sup>2</sup> that citizens can use to report environmental concerns. DEP is responsible for investigating and enforcing clean-up of nonemergency small-quantity fuel, oil, or chemical spills that do not pose an immediate risk to public health or safety. The County's fire and rescue service responds to emergency and large quantity spills.

During FY20, 401 complaints were made concerning the illegal solid waste dumping. DECC investigated illegal dumping complaints and issued 14 formal enforcement actions (8 civil citation with fines totaling \$4,000 and 6 NOVs) and numerous warning letters. As in previous years, most complaints concerned bags of trash, vegetation (leaves and brush), or other unwanted materials either dumped or being stored on

<sup>1</sup> <https://www.montgomerycountymd.gov/DEP/contact/illegal-dumping.html>

<sup>2</sup> <http://www3.montgomerycountymd.gov/311/Solutions.aspx?SolutionId=1-3G15WH>



private or public property. Only a small percentage of these cases represented a potential for direct runoff of contaminated material into storm drains or receiving systems. Complaint resolution invariably involved removing and properly disposing of trash and debris and properly storing (for example, under cover) other materials.

### E.3.d Water Quality Investigations in FY20

In FY20, overall, the DECC investigated 199 water-quality issues: 126 complaints, 48 SSOs, and 25 hazardous materials-related cases. These investigations resulted in 28 warning letters and 35 formal enforcement actions, of which 8 were civil citation fines totaling \$4,000 and 27 were NOVs. The formal enforcement actions are summarized in Table III.E.10, and the entire list of investigated water quality issues is provided Appendix G.

Table III.E.10. FY20 Stormwater Discharge Enforcement Cases						
No.	Case Number	Date Issued	Fine	Case Type	Case Subtype	Citation Number
1	20191818	7/1/2019	\$500	Stormwater	Pollutant discharge	5Z39889470
2	20192828	12/30/2019	\$500	Stormwater	Pollutant discharge	2Z39889474
3	20201012	1/14/2020	\$500	Stormwater	Pollutant discharge	3Z39889475
4	20192791	12/9/2019	\$500	Hazardous materials	Assistance requested	2Z33852534
5	20201688	4/28/2020	\$500	Stormwater	Pollutant discharge	3Z33852535
6	20191906	7/16/2019	\$500	Water quality	Hotspot survey	3Z39889692
7	20192599	12/2/2019	\$500	Stormwater	Pollutant discharge	1Z39889417
8	20192645	2/5/2020	\$500	Stormwater	Pollutant discharge	2Z39889418
9	20191966	7/22/2019	NOV	Stormwater	Pollutant discharge	N/A
10	20192100	7/24/2019	NOV	Stormwater	Pollutant discharge	N/A
11	20192151	8/6/2019	NOV	Stormwater	Pollutant discharge	N/A
12	20192695	11/22/2019	NOV	Stormwater	Pollutant discharge	N/A
13	20192842	1/3/2020	NOV	Stormwater	Pollutant discharge	N/A
14	20201084	1/21/2020	NOV	Stormwater	Pollutant discharge	N/A
15	20201085	1/22/2020	NOV	Stormwater	Pollutant discharge	N/A
16	20201125	1/29/2020	NOV	Stormwater	Pollutant discharge	N/A
17	20201130	1/30/2020	NOV	Water quality	Hotspot survey	N/A
18	20201132	2/5/2020	NOV	Water quality	Hotspot survey	N/A
19	20201129	2/5/2020	NOV	Water quality	Hotspot survey	N/A

<b>Table III.E.10. FY20 Stormwater Discharge Enforcement Cases</b>						
<b>No.</b>	<b>Case Number</b>	<b>Date Issued</b>	<b>Fine</b>	<b>Case Type</b>	<b>Case Subtype</b>	<b>Citation Number</b>
20	20201138	2/5/2020	NOV	Stormwater	Pollutant discharge	N/A
21	20201165	2/5/2020	NOV	Stormwater	Pollutant discharge	N/A
22	20201123	2/11/2020	NOV	Stormwater	Pollutant discharge	N/A
23	20201123	2/12/2020	NOV	Stormwater	Pollutant discharge	N/A
24	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
25	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
26	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
27	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
28	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
29	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
30	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
31	20201333	3/26/2020	NOV	Water quality	Hotspot survey	N/A
32	20201408	4/1/2020	NOV	Stormwater	Pollutant discharge	N/A
33	20201576	4/14/2020	NOV	Stormwater	Pollutant discharge	N/A
34	20201576	4/22/2020	NOV	Stormwater	Pollutant discharge	N/A
35	20201899	5/20/2020	NOV	Stormwater	Pollutant discharge	N/A

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## E.4 Trash and Litter

### 4. Trash and Litter

In 2006, Montgomery County committed to the goal of a trash free Potomac River by 2013 and signed the *Potomac River Watershed Trash Treaty* with other Washington, D.C. metropolitan area jurisdictions. Activities to meet obligations under the Treaty are specified in the *Trash Free Potomac Watershed Initiative 2006 Action Agreement* and include trash abatement program implementation, education, and evaluation to improve the quality of the Potomac River and its tributaries. The Potomac River Watershed Trash Treaty is incorporated by reference into this permit.

Consistent with the Potomac River Watershed Trash Treaty, Montgomery County shall:

- a. Support and implement regional strategies to reduce trash and increase recycling;
- b. As part of its public education program described in Part III.E.7 below, within one year of permit issuance, develop a work plan to implement a public outreach and education campaign with specific performance goals and corresponding deadlines to increase residential and commercial recycling rates, improve trash management, and reduce littering;
- c. Within one year of permit issuance, establish baseline conditions of trash being discharged to and from the storm drain system and develop a trash reduction strategy and work plan for the Montgomery County portion of the Anacostia Watershed detailing control measures and deadlines by which those measures will be implemented to meet the 2013 goal of a trash free Potomac River. MDE shall review the work plan and approve it, if it meets the requirements of this permit;
- d. In conformance with the County's trash reduction strategy, implement approved control measures according to the schedule specified in the Anacostia trash reduction work plan to eliminate the discharge of trash and debris from the County storm drain system;
- e. Evaluate and modify local trash reduction strategies with an emphasis on source reduction and proper disposal;
- f. Conduct a public participation process in the development of the trash reduction strategy that includes:
  - i. Notice in a local newspaper and the County's web site outlining how the public may obtain information and provide comments to the County regarding the trash reduction strategy;
  - ii. Procedures for providing the strategy to interested parties upon request;
  - iii. A minimum 30-day public comment period; and
  - iv. A summary of how the County addressed or will address any material public comments received.

- g. Submit annually, a report which details progress toward implementing the requirements of the Trash Free Potomac Watershed Initiative 2006 Action Agreement. The report shall describe the status of trash and litter elimination efforts including resources (e.g., personnel and financial) expended and the effectiveness of the program components described above toward meeting the goals of the Anacostia Watershed trash reduction strategy developed according to PART III.E.4.d. above

#### **E.4.a Regional Strategies and Work Plan to Reduce Trash and Increase Recycling**

The Permit requires the County to implement multifaceted trash abatement and antilittering programs to meet goals of the Potomac River Watershed Trash Treaty and achieve trash reductions to meet the County's wasteload allocation in the Anacostia River Watershed Trash total maximum daily load (Anacostia Trash TMDL). Specific Permit requirements include County participation in regional strategies to reduce trash and increase recycling, public outreach, and education work plans. Requirements are meant to increase residential and commercial recycling rates, improve trash management, reduce littering, and develop trash reduction strategies for the Anacostia River Watershed.

##### **i. Trash Reduction Strategy and Work Plans**

The Anacostia Trash Reduction Strategy and work plans were developed as part of the County's overall Coordinated Implementation Strategy. The County is also working with the Anacostia Watershed Restoration Partnership, Alice Ferguson Foundation, and other partners to meet regional trash-reduction goals. Initiatives directly related to the regional campaigns include ongoing education and outreach for recycling and litter reduction, mass media outreach campaigns, and litter removal from streets, stormwater ponds, and transit stops.

##### **ii. Carryout Bag Tax**

From the implementation of the carryout bag tax (January 2012) to June 2020, more than 525 million nonreusable bags have been sold in the County. Approximately 65 million were sold in FY20, with about 5.4 million sold per month (same as FY19). According to the U.S. Census Bureau, the County population estimate for 2015 is 1,040,116 people. This averages out to about five disposable bags bought per County resident each month. In FY20, registered retailers paying the bag fee increased from 1,586 to 1,883. This increase from previous years can be credited to the mailing DEP and Department of Finance sent out in FY20.

In FY19, DEP began assessing the bag law to determine whether DEP could improve compliance with the law. Department of Finance and DEP developed a mailing initiative in FY20 to retailers who were not registered and remitting the bag tax. The purpose of the mailing initiative was to gain better compliance from retailers not following the law's requirements; 330 responses were submitted as a result of the mailing. As of December 24, 2019, 1,902 retailers were registered, which was an increase over FY19. The mailing increased the number of retailers registered by 262. Of those new retailers registered, the County sent a letter to 249. Revenue increased by \$28,197, which reflects the total payments made only from new retailers registered after the mailing. DEP continues to work on outreach and education about the carryout bag tax to ensure retailers are complying with the law and to encourage residents to bring reusable bags when shopping.



In FY20, DEP once again distributed approximately 50,000 reusable bags to the community. This was achieved through various events, stocking them at every County public library, and through the County's partnership with Manna Foods. DEP continued the annual holiday campaign with a strong message to use reusable bags for holiday shopping. Staff attended many in-person events to distribute reusable bags to holiday shoppers. For the first time, the holiday campaign was broadcast on television. County staff were able to participate in two local news channel segments to help spread awareness on making the holiday season more sustainable.

Due to the unique situation of the COVID-19 pandemic, DEP staff increased outreach and education to residents about community spread of the virus and cleaning their reusable bags. Initially, using reusable bags caused some concern. A Montgomery County Council member proposed a temporary pause to the carryout bag tax law. The Center for Disease Control<sup>1</sup> has established that "COVID-19 is thought to spread mainly through close contact from person to person, including between people who are physically near each other (within about 6 feet)."

County staff and public advocacy groups worked with the Council member's office to withdraw the proposal and instead conducted outreach on keeping reusable bags clean and supporting retailers request for customers to bag their own items if using reusable bags. DEP and the Council member's office created a public service announcement and educational outreach materials about how to keep reusable bags clean. DEP has promoted this information through its social media outlets and on its website.

### **iii. Ban on Using and Selling Expanded Polystyrene Materials**

The Recycling and Resource Management Division (RRMD) of DEP continued efforts to educate businesses; affected retailers; County agencies, contractors, and lessees; and the public about the County's ban on using and selling expanded polystyrene (Styrofoam<sup>®</sup>) food service ware and loose-fill packing peanuts. RRMD notified food service businesses that all food service ware used and distributed in the County must be either recyclable in Montgomery County or compostable. RRMD also posted an annual update on information pertaining to alternative recyclable and compostable food service ware on its website and investigated complaints received regarding noncompliance.

### **iv. Proposed Legislation to Address Other Problematic Materials**

During FY20, Montgomery County Council introduced legislation to ban using and selling rigid polystyrene food service ware, effectively increasing the existing ban on expanded polystyrene to include all polystyrene food service items. Also during FY20, the Council introduced legislation pertaining to drinking straws, requiring that restaurants and food service businesses provide straws to dine-in customers only upon request. The legislation further requires any straws provided be either reusable or made from only marine degradable or home compostable materials. These two legislations will help to reduce the amount of waste created, eliminate problematic nonrecyclable plastics, and reduce litter.

### **v. Recycling and Waste Diversion Initiatives**

According to the MDE's *Maryland Waste Diversion Rates and Tonnages Report* for CY18,<sup>2</sup> Montgomery County's overall recycling and waste diversion rate was 61.91 percent. The County's goal is to reduce waste and recycle 70 percent and more, aiming eventually for zero waste.

<sup>1</sup> <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>

<sup>2</sup> <https://mde.maryland.gov/programs/LAND/AnalyticsReports/MSWMDR-%202019.pdf>

The County has a robust waste reduction, reuse, and recycling outreach and education program, with a strong recycling volunteer component. During FY20, staff and RRMD recycling program volunteers participated in 119 educational events and activities, providing 18,676 people with assistance and information on waste reduction, reuse, recycling, recycled products, composting, grasscycling, and other related topics. Recycling volunteers contributed almost 875 hours of direct service, with an estimated value of \$23,106. Due to COVID-19, all in-person events after March 13, 2020 were cancelled, and only online events were available. As outlined below, RRMD consistently monitors reuse opportunities and recycling markets to identify potential opportunities to remove additional materials from the waste stream, redirect them for reuse by others, and/or divert them for recycling:

- RRMD operated a model food scraps recycling and collection program at the County's Executive Office Building (EOB) in Rockville since November 2011. This project, in which preconsumer food scraps generated in the building's cafeteria are separated for recycling collection, has diverted a total of 181.7 tons of food scraps for commercial composting. Due to COVID-19 pandemic, the EOB cafeteria closed on March 23, 2020 and remained closed through the remainder of FY20.
- RRMD also manages the food scraps recycling and collection program for preconsumer food scraps generated from the cafeterias at the Montgomery County Council office building in Rockville and the Montgomery County Public Safety Headquarters Building in Gaithersburg.
- During FY20, RRMD implemented a commercial food scraps recycling program. Starting on May 29, 2020, food scraps were collected from three partners and delivered to a regional compost facility. Through June 30, 2020, 5.27 tons of commercial food scraps were collected for recycling.
- RRMD accepts usable paint and offers it to county residents and nonprofit organizations. During FY20, the County distributed approximately 60 gallons of free latex paint and 123 cans of spray paint to residents through the County's "Paint Store." No paint was taken by nonprofit organizations in FY20.
- RRMD collects bicycles and refurbishes and distributes them to different countries around the world. During FY20, 12 tons of refurbished bicycles were removed from the waste stream and shipped to countries worldwide, as well as distributed locally.
- The County's Shady Grove Processing Facility and Transfer Station has a vendor that accepts waste vegetable oil for the sole purpose of biodiesel production. During FY20, 22 tons of straight vegetable oil was shipped out for processing into biodiesel.
- The County distributed 2 tons of usable, donated construction materials and gave away 8 tons of books that were donated at the County's Shady Grove Processing Facility and Transfer Station in FY20.

#### **vi. Trash Removal from County Right-of-Way**

The County's 311 customer service center (MC311) tracks all calls related to litter on County roads (the County's Department of Transportation [DOT] is responsible for clean-up); this information is conveyed to the County's police force to increase surveillance of these roadside hotspots. DOT's Adopt-A-Road Program supplies community groups, who have adopted a total of 498 road segments (each segment measuring about 1 mile) and 14 adopted spots, with equipment in exchange for their voluntary services of picking up trash and litter along roadways. A total of 207 groups reported 503 clean-ups, picking up a

total of 2,992 (around 40 to 55 gallons) bags of trash during FY20. More than 1,783 volunteers assisted with these clean-ups.

#### **vii. Increased Litter Removal from County-Owned Public Areas**

Transit stops (bus stops) are prime litter hotspots. DOT maintains litter containers at all 710 sheltered bus stop locations, 5 transit centers, and other high-activity areas around the County. Placing containers is prioritized based on stop activity by both the County Ride On Transit System and the Washington Metropolitan Area Transit Authority buses. During FY20, DOT spent \$542,383.00 to empty transit-stop trash cans around the County, which netted 307.51 tons of trash.

#### **viii. Illegal Dumping Enforcement**

The County MC311 customer service center for nonemergency services allows citizens to report incidents involving environmental problems, including illegal dumping. Outside normal business hours, citizens can report issues through the MC311 and DEP websites. During FY20, 401 complaints were made concerning the solid waste illegal dumping. The County's Division of Energy, Climate, and Compliance investigated illegal dumping complaints and issued 14 formal enforcement actions (8 civil citation with fines totaling \$4,000 and 6 NOVs) and numerous warning letters. The vast majority of complaints concerned bags of trash, vegetation (leaves and brush), or other unwanted materials either dumped or being stored on private or public property. Only a small percentage of these cases represented a potential for direct runoff of contaminated material into a storm drain or receiving system. Complaint resolution invariably involved removing and properly disposing of trash and debris and properly storing (for example, under cover) other materials.

#### **ix. Anti-Litter Enforcement**

The Department of Housing and Community Affairs (DHCA) Code Enforcement Division investigates and enforces violations of litter code on private property. During FY20, the agency handled 2,761 trash and rubbish-related complaints and violations and issued 49 civil citations to property owners. DHCA estimates that 85.80 tons of trash were removed as a result of their "clean or lien" program.

### **E.4.b Trash Baseline in the Anacostia River Watershed**

The TMDL baseline load for trash is 228,683 pounds per year (see Table III.J.2 in Section III.J).

### **E.4.c Trash Removal in the Anacostia River Watershed**

The DEP's Watershed Restoration Program, described in Section III.G, is actively installing stormwater management (SWM) practices to meet the Permit's impervious area stormwater control requirement. Many of these practices are structural and do not allow trash to pass. Debris tends to build up around forebays, plants and internal elements, and outlets. DEP ensures trash is removed from the facilities through its Stormwater Inspection and Maintenance Program. In the Anacostia River Watershed, best management practices (BMPs) installed or retrofitted after the baseline year of the Anacostia Trash TMDL removed 13,207 pounds of trash from the watershed in FY20.

Through volunteer clean-up events sponsored by DEP, 2,282 pounds of trash were removed from the Anacostia River Watershed in FY20. DEP is working with several groups, agencies, and departments to improve its reporting on Anacostia River Watershed trash removal. Combining the information from the BMPs installed or retrofitted after the baseline year of the Anacostia Trash TMDL with the volunteer

clean-up events in the Anacostia River Watershed, the County has removed 15,489 pounds of trash from the Anacostia River Watershed—a 6.77-percent reduction from the TMDL baseline (Table III.E.11).

<b>Table III.E.11. Anacostia River Watershed Trash Removal in FY20</b>	
<b>Mitigation Methods</b>	<b>Trash Removed (pounds)</b>
Volunteer clean-up events	2,282
SWM BMPs installed after 2010	13,207
<b>Totals:</b>	<b>15,489</b>

In 2016, the three jurisdictions in the Anacostia River Watershed began meeting regularly as part of the Anacostia Trash Reduction Workgroup organized through Metropolitan Washington Council of Governments (MWCOG). This group aims to standardize the Anacostia Trash TMDL and MS4 reporting metrics among the jurisdictions. The first reporting metric developed by the group determined the correct reduction factor of trash bags collected from volunteer clean-up events held in all jurisdictions. Considering the MS4 allocation and wet-weight reduction, the County determined that 16.05 pounds of trash for each trash bag collected at a volunteer clean-up event within the Anacostia River Watershed should be counted towards meeting the Anacostia Trash TMDL requirements. Starting in FY18, DEP began using this metric for reporting volunteer clean-up event trash removal towards meeting the County’s Anacostia Trash TMDL requirements. The Anacostia Trash Reduction Workgroup continues to work on standardizing reporting metrics for street sweeping, trash traps, and education and outreach.

DEP continues to work on installing a trash trap within the Anacostia River Watershed. A MWCOG feasibility study within the watershed determined the most suitable locations for installing a Bandalong Litter Trap™. In FY20, the County’s grant program issued a Request for Proposal under a new track for litter trap installation and maintenance. The grant was awarded to the Anacostia Riverkeeper, and it will support installing the first litter trap in Montgomery County along Lockridge Drive, a tributary to the Anacostia River. The project also will have an educational component. The litter trap should be installed in FY21.

On March 30, 2018, the U.S. District Court for the District of Columbia ruled in favor of the Natural Resources Defense Council (NRDC) and directed the U.S. Environmental Protection Agency to develop or approve a replacement TMDL for the Anacostia Trash TMDL. NRDC’s contention was that the TMDL should contain a maximum load of trash, rather than the required trash removal from the waterway. DEP plans to continue current efforts to prevent and reduce trash until a replacement TMDL is established, at which point the efforts will be revisited and modified as necessary.

#### E.4.d Evaluate and Modify Local Trash Reduction Strategies

##### i. Anacostia River Watershed Trash Monitoring – Post-TMDL

DEP continues to monitor and assess trash in the Anacostia River Watershed through a contract with the MWCOG. Monitoring to date includes the following:

- DEP completed 10 cycles of post-TMDL trash monitoring in the Anacostia River Watershed. The Anacostia Tributary monitoring follows the same protocols for stream-level and land-based surveys

as those used for Anacostia Trash TMDL development. Five items (that is, plastic bags other than carryout; plastic bottles; cloth, carpeting, and clothing; carryout plastic bags; and miscellaneous items) composed 66 percent of the total trash weight collected during FY20. As in prior years, the weight of expanded polystyrene is the lowest among these selected items, and the weight of all plastic bags (for example, carryout and other bags) is the highest among all trash items.

- In FY20, DEP launched a community-based social marketing campaign in the White Oak neighborhood to discourage littering and encourage proper trash disposal. This area was chosen from Anacostia trash-monitoring sites because it has the highest recorded trash in the stream. Baseline monitoring was conducted within this specific neighborhood before the campaign began for comparison. DEP planned on using this campaign to test the top-recommended anti-litter programs and campaigns. The campaign launched in September 2019 with bus ads, flyers, posters distributed to local apartment complexes and businesses, and efforts to engage local schools. The campaign used volunteer models who represented the local community for the advertisement images. Staff also attended community events to spread information about the campaign. A paid social media ad campaign was planned for a Spring 2020 launch, complete with contests and prizes, however, due to the COVID-19 pandemic, the ads were deemed unusable because they did not promote social distancing; the campaign's fate is uncertain. DEP decided the developed campaign materials will be distributed, when appropriate, in areas of the Anacostia region to run a more widespread campaign. DEP will change the imaging and messaging for the targeted communities. Outreach campaigns are expected to expand and continue to reduce litter in the Anacostia River Watershed in the coming years.

## **ii. Trash Removal at Stormwater Facilities**

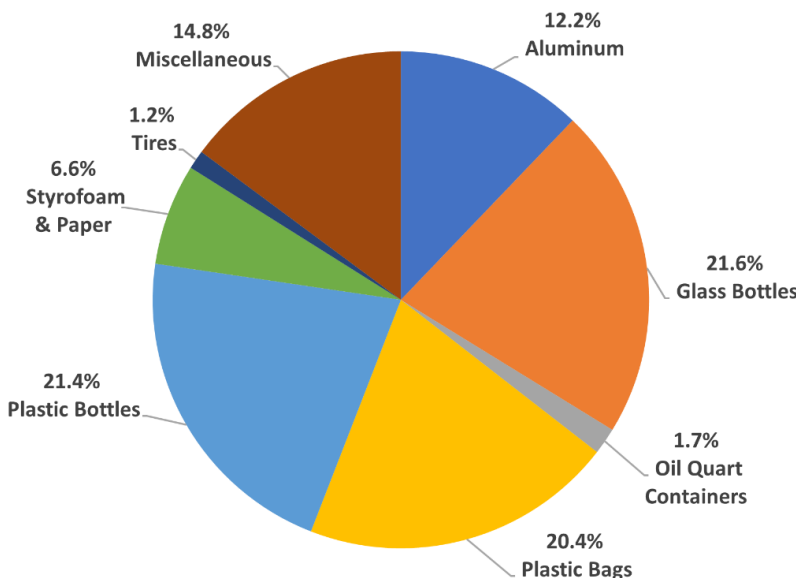
The County contracts the removal of organic debris and trash from County-maintained SWM facilities. These trash collections are augmented by citizen volunteer clean-up events. During FY20, trash collection events were held at 10 different facilities which sorted and weighed the collected trash. Unreported other clean-up events took place, where collected trash was not sorted and weighed. Cleanings are scheduled as needed, and the frequency is related to the number of storms that wash in large amounts of material. DEP collects and analyzes information about the trash and organic debris removed from these facilities to better understand what is collected from SWM ponds. This information is not, however, used to calculate the TMDL reductions for the Anacostia Trash TMDL.

A total of 3,259 pounds of trash (including aluminum, plastic and glass bottles, plastic bags, tires, styrofoam, paper, and miscellaneous items) were collected from ponds in FY20. Data on organic debris (usually logs and branches) are only recorded if an extensive amount needs to be removed. Smaller amounts of organic debris are left on site and, therefore, not weighed or recorded. Data on organic debris were not recorded during FY20. Table III.E.12 provides for full breakdown of collected trash.



<b>Table III.E.12. Trash Collected from Ponds during FY20</b>											
<b>Date</b>	<b>Ponds Cleaned</b>	<b>Trash (pounds)</b>								<b>Organic Debris</b>	<b>Total</b>
		<b>Aluminum</b>	<b>Glass Bottles</b>	<b>Oil Quart Containers</b>	<b>Plastic Bags</b>	<b>Plastic Bottles</b>	<b>Styrofoam and Paper</b>	<b>Tires</b>	<b>Miscellaneous</b>		
8/13/2019	1	9	1	1	1	43	3	-	10	-	<b>68</b>
1/31/2020	1	5	5	2	35	47	25	-	50	-	<b>169</b>
2/5/2020	1	28	18	1	1	15	5	-	2	-	<b>69</b>
2/6/2020	1	83	197	21	182	41	65	-	235	-	<b>824</b>
2/11/2020	2	62	50	26	83	28	28	40	46	-	<b>363</b>
2/12/2020	1	27	90	2	76	45	17	-	36	-	<b>293</b>
2/18/2020	1	122	240	3	184	363	31	-	93	-	<b>1,036</b>
2/25/2020	1	17	45	1	61	20	14	-	-	-	<b>158</b>
3/4/2020	1	44	58	1	43	97	27	-	12	-	<b>282</b>
<b>Total:</b>	10	397	704	57	665	698	215	40	484	-	<b>3,259</b>
<b>Percent:</b>		<b>12.2</b>	<b>21.6</b>	<b>1.7</b>	<b>20.4</b>	<b>21.4</b>	<b>6.6</b>	<b>1.2</b>	<b>14.8</b>	<b>0.0</b>	<b>100.0</b>

Recyclable materials (aluminum, glass and plastic bottles) made up 55.2 percent of all trash (non-organic debris) collected. Over the past 10 years, there has been a shift away from glass bottles and a corresponding increase in plastic bottles. However, in FY20, glass bottles made up 21.6 percent and plastic bottles made up 21.4 percent by weight of the trash items collected. (Figure III.E.5). More pounds of glass bottles were collected (704) than any of the other categories of trash.



**Figure III.E.5. Trash Collected from Stormwater Ponds by Weight in FY20**

#### E.4.e Anti-Litter Education and Public Outreach

In FY20, DEP continued to work with active community groups to support and expand local clean-up efforts, particularly in the Anacostia River Watershed. The Oakview and White Oak communities are very active in cleaning up and improving their neighborhoods, and they currently organize a minimum of 2 clean-ups a year (fall and spring). Due to the COVID-19 pandemic, all scheduled spring 2020 clean-up events were canceled.

DEP supported four volunteer clean-ups, either organized by communities in the Anacostia River Watershed or directly by DEP during FY20. From these four events, volunteers removed 2,282 pounds of trash, all of which was from within the Anacostia River Watershed (Table III.E.13).

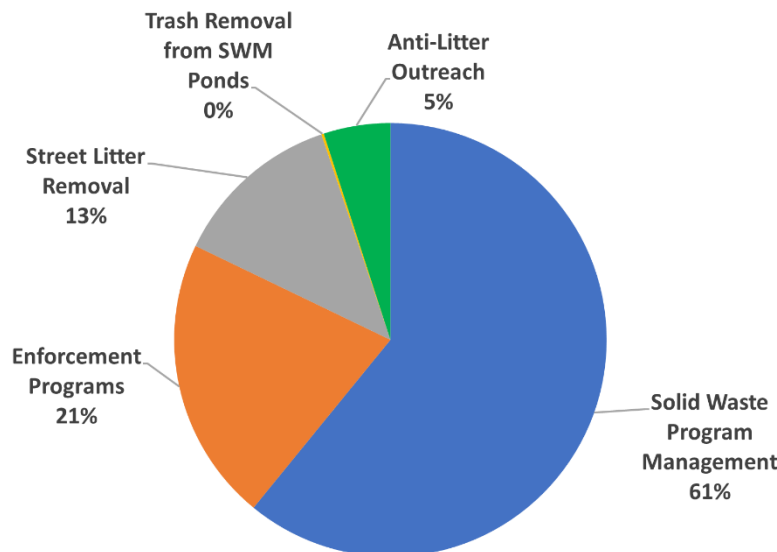
Table III.E.13. Summary of the Volunteer Trash Clean-Ups Conducted in FY20		
Location	Date	Collected (pounds)
Oakview at East Light Drive	October 05, 2019	951
White Oak	September 28, 2019	256
Townes of Gloucester	October 19, 2019	385
Wheaton Pond	October 26, 2019	690
<b>Total:</b>		<b>2,282</b>

Related to the COVID-19 pandemic, DEP discovered that people were dropping personal protection equipment (PPE) such as masks and gloves, as litter. DEP responded to this through educational posts on social media outlets. Two videos, one in English and another in Spanish, were created to educate the public about the litter issue and how to dispose of PPE properly.

#### E.4.f Annual Cost of Trash Reduction Efforts

For FY20, the County invested an estimated \$6,532,209 in trash reduction strategies and programs; this is a decrease of about 6.6 percent from FY19. A breakdown of cost per program type can be seen in Table III.E.14 and on Figure III.E.6.

<b>Table III.E.14. Estimated Trash Reduction Costs for Various Programs in FY20</b>	
<b>Program</b>	<b>Costs</b>
Solid Waste Program Management	\$3,978,600
Enforcement Programs	\$1,386,254
Street Litter Removal	\$829,366
Trash Removal from SWM Ponds	\$11,885
Anti-Litter Outreach	\$326,104
<b>Total:</b>	<b>\$6,532,209</b>



**Figure III.E.6. Estimated FY20 Percentage of Trash Reduction Cost**

## E.5 Property Management

### 5. Property Management

The County shall ensure that a Notice of Intent (NOI) has been submitted to MDE and a pollution prevention plan developed for each County-owned and municipal facility requiring NPDES stormwater general permit coverage. The status of pollution prevention plan development and implementation for each County-owned and municipal facility shall be submitted annually.

The County has 11 facilities covered under the MDE General Permit for Discharges of Stormwater Associated with Industrial Activity (General Permit 12-SW) and Montgomery County Public Schools (MCPS) has six facilities, and Table III.E.15 lists County facilities and Table III.E.16 lists the MCPS facilities. MDE accepted Notices of Intent (NOIs) for these facilities in August 2014 for coverage until December 31, 2018. MDE issued a final determination for a modification to their General Permit, identified as General Permit 12-SW-A and its effective date is December 7, 2018. The General Permit 12-SW-A expiration date is the same as that for General Permit 12-SW: December 31, 2018. MDE is developing a renewal permit, and until the permit is reissued, the existing permit will be administratively extended (according to its terms). On June 1, 2020, MDE signed a Consent Decree stating that it will no longer issue new registrations under expired General Permit 12SW-A.

All facilities, including MCPS facilities, covered under General Permit 12-SW have maintained up-to-date coverage and a stormwater pollution prevention plan (SWPPP). When implementing the SWPPPs, the County and MCPS identified good-housekeeping needs, including routine sweeping, annual training, and capital improvements, and implemented those at all facilities. Appendix H includes MDE's acceptance letters.

For most County facilities, the Department of General Services (DGS) is ultimately responsible for meeting the National Pollutant Discharge Elimination System (NPDES) General Permit requirements, including updates to facility SWPPP. Agencies housed at the facilities, including the Department of Transportation's (DOT's) Divisions of Highway Services (DHS) and Transit Services, DEP's Recycling and Resource Management Division (RRMD), and DGS's Fleet Management Division (FMD), are responsible for implementing portions of the SWPPP relating to their operations. Both FMD and DHS have program managers responsible for environmental compliance for their respective facility's operations.

### E.5.a Pollution Prevention at Departments of Transportation and General Services Facilities

All County facilities covered under MDE General Permit 12-SW have annual comprehensive SWPPP inspections. The facilities also are inspected monthly and receive quarterly water quality monitoring at all stormwater outfall locations. At some locations, the County has not maintained the required quarterly stormwater quality monitoring, therefore, since FY17, the County has engaged an outside third-party environmental consultant to provide supplemental services. Additionally, DOT conducts annual training and site inspections.

**Table III.E.15. Inventory and Status of County Facilities Covered under Maryland General Permit for Discharges of Stormwater Associated with Industrial Activity**

<b>Facility, Responsible Agency</b>	<b>Application / NPDES Number</b>	<b>Watershed / Facility Area</b>	<b>Current Status</b>	<b>Current SWPPP Status</b>
Colesville Highway Maintenance Depot, DOT	12SW0267 / MDR00267	Anacostia River 02140205 / 11.73 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019
Damascus Highway Maintenance Depot, DOT	12SW0269/ MDR000269	Seneca Creek 02140208 / 1.4 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2017
Equipment Maintenance and Transit Operations Center, DGS	12SW0277 / MDR000277	Rock Creek 02140206 / 15.1 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019
Gaithersburg Highway Maintenance Depot, DOT	12SW2487 / MDR002487	Rock Creek 02140206 / 0 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019
Poolesville Highway Maintenance Depot, DOT	12SW0268/ MDR000268	Seneca Creek 02140208 / 4 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019
Seven Locks Maintenance Center, DGS, including Bethesda Highway, Maintenance Depot DOT	12SW0265 / MDR000265	Cabin John Creek 02140207 / 18.86 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019
Kensington Small Transit Service Maintenance Facility at Nicholson Court, DGS	12SW2311 / MDR002311	Rock Creek 02140206 / 3.31 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019
Silver Spring Highway Maintenance Depot, DOT, and Bus Maintenance Facility, DGS	12SW0278 / MDR000278	Rock Creek 02140206 / 17.47 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019



**Table III.E.15. Inventory and Status of County Facilities Covered under Maryland General Permit for Discharges of Stormwater Associated with Industrial Activity**

Facility, Responsible Agency	Application / NPDES Number	Watershed / Facility Area	Current Status	Current SWPPP Status
Shady Grove Processing Facility, DEP	02SW0262 / MDR000262	Rock Creek 02140206 / 52.5 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2019
Gude Landfill, DEP	02SW0263	Rock Creek 02140206 / 120 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated 2015
Oaks Landfill, DEP	02SW0264	Patuxent River 02121107, Rock Creek 0240206 / 190 acres	NOI accepted for registration under NPDES General Permit. Coverage until December. 31, 2018	Updated 2019

**Table III.E.16. Inventory and Status of MCPS Facilities Covered under Maryland General Permit for Discharges of Stormwater Associated with Industrial Activity**

Facility, Responsible Agency	Application / NPDES Number	Watershed / Facility Area	Current Status	SWPPP Status
Bethesda Fleet Maintenance, Bethesda Facilities Maintenance Depot	12SW0524 / MDR000524	Cabin John Creek 02140207 / 6.2 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated FY14
MCPS Facilities Maintenance Depot	12SW3325 / MDR003325	Seneca Creek 02140208 / 34.4 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated FY18
Randolph Fleet Maintenance, Randolph Facilities Maintenance	12SW0522 / MDR000522	Anacostia River 02140205 / 9.3 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated FY14

**Table III.E.16. Inventory and Status of MCPS Facilities Covered under Maryland General Permit for Discharges of Stormwater Associated with Industrial Activity**

<b>Facility, Responsible Agency</b>	<b>Application / NPDES Number</b>	<b>Watershed / Facility Area</b>	<b>Current Status</b>	<b>SWPPP Status</b>
Shady Grove Fleet Maintenance, Shady Grove Facilities Maintenance	12SW0523 / MDR000522	Rock Creek-02140206 / 15.0 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated FY14
West Farm Transportation Depot	12SW1258 / MDR001258	Anacostia River 02140205 / 5.06 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated FY14
Clarksburg Fleet Maintenance, Clarksburg Facilities	12SW0525 / MDR000525	Seneca Creek 02140208 / 15.11 acres	NOI accepted for registration under NPDES General Permit. Coverage until December 31, 2018	Updated FY14

During FY20, DOT and DGS provided annual training on the General Permit requirements to all facility operation employees at each facility location. This included operation-specific training and annual SWPPP inspection findings. The training also included assessments, needs, and improvements, as well as ways to minimize using hazardous substances, pollutants, or contaminants and prevent their exposure to precipitation and stormwater runoff. DGS has transitioned to a computer-based training system and developed an annual mandatory Pollution Prevention Training Module.

### E.5.b Pollution Prevention at the Division of Recycling and Resource Management Facilities

RRMD is responsible for meeting the General Permit requirements at the Shady Grove Processing Facility and Gude and Oaks Landfills. The RRMD Environmental Compliance Manager, Senior Engineer, and Engineer I are responsible for ensuring environmental compliance at solid waste operational facilities.

RRMD quarterly stormwater inspection reports indicate the Shady Grove Processing Facility and Oaks and Gude Landfills are in good shape. Litter is regularly collected on the sites and along the perimeter fencelines, and landfills are well vegetated. The Gude Landfill is routinely inspected, and stormwater depressions and leachate seeps are identified and repaired as needed. The Shady Grove Processing Facility storm drain inlet screens and “capture bags” that screen trash are routinely inspected and cleaned.

### E.5.c Annual Staff Training

Annual site-specific training was conducted for facility staff at several depots, landfills, and the transfer station. As requested by MDE, training dates and staff in attendance are provided in Table III.E.17.

<b>Table III.E.17. Summary of Pollution Prevention Training</b>		
<b>Depot, Responsible Agency</b>	<b>Training Date<sup>1</sup></b>	<b>Attendees</b>
Equipment Maintenance and Transit Operations Center, Kensington Small Transit Service Maintenance Facility at Nicholson Court, Seven Locks Maintenance Center, Silver Spring Bus Maintenance Facility, DGS and DOT	July 1, 2019 to June 30, 2020	138
Bethesda Highway Maintenance Depot, DOT	January 29, 2020	33
Colesville Highway Maintenance Depot, DOT	February 5, 2020	37
Damascus Highway Maintenance Depot, DOT	January 30, 2020	11
Gaithersburg Highway Maintenance Depot, DOT	February 6, 2020	63
Poolesville Highway Maintenance Depot, DOT	February 7, 2020	11
Silver Spring Highway Maintenance Depot, DOT	February 10, 2020	30

**Table III.E.17. Summary of Pollution Prevention Training**

<b>Depot, Responsible Agency</b>	<b>Training Date<sup>1</sup></b>	<b>Attendees</b>
Shady Grove Processing Facility, Gude Landfill, Oaks Landfill, DEP	December 5, 2019	18
<b>TOTAL</b>		<b>341</b>

<sup>1</sup> Date ranges represent the time over which training was completed by individual employees through computer based online training which has been implemented at the DGS and DOT facilities.

## E.5.d Montgomery County Co-Permittees Property Management

### i. Town of Poolesville

The Town of Poolesville is the only one of the six small municipal co-permittees required to have an MDE General Permit 12-SW. The Town of Poolesville has a maintenance yard associated with its wastewater treatment plant with outside truck and materials storage and maintains a current site SWPPP. The Poolesville Public Works Director is responsible for the site SWPPP and conducts weekly inspections to assure compliance. The Town reported no changes for FY20.

### ii. Montgomery County Public Schools

MCPS operates six industrial sites (Shady Grove, Randolph, Facilities Maintenance, Clarksburg, West Farm, and Bethesda Depots) that are categorized under the MDE General Permit 12-SW (these sites are listed in Table III.E.18). These sites serve both maintenance and transportation activities; the MCPS bus fleet is maintained at these sites. MCPS is responsible for conducting monthly and annual site evaluations for all six industrial facilities. In addition, MCPS conducts quarterly visual monitoring inspections at outfalls in the SWPPP and has implemented the improvements recommended by the annual inspections. MCPS also treats 100 percent of the impervious surfaces at the six industrial sites.

MCPS is responsible for training employees in positions whose work could involve stormwater pollution—primarily maintenance and transportation staff. During FY20, 369 MCPS staff completed an online SWM overview course, and 112 of them had previously completed the course. MCPS maintains 20 underground storage tanks at 11 facilities under MDE regulations. In addition, MCPS operates a wastewater treatment plant at Darnestown Elementary School.

### iii. Integrated Pest Management at Montgomery County Public Schools

MCPS implements an Integrated Pest Management (IPM) Program at all of its schools, centers, and facilities, with an emphasis on physical, rather than chemical, measures for pest control and in accordance with MCPS Regulation ECF-RB, Pesticides Use in Schools. MCPS IPM training emphasizes proper sanitation measures and structural exclusion to control pests, using pesticides only when other measures have failed. Under Maryland law, only licensed and registered pest control workers may apply any pesticide or herbicide in a school building or to school grounds (Code of Maryland Regulation Section 15.05.02.10). Also, only certain products are approved for use in and around MCPS facilities by certified pest applicators, and all chemicals used undergo a thorough safety review. State law also

specifies storage, use, signage, and notification requirements for pesticide applications. MCPS prequalifies contractors who maintain high school athletic fields to have more centralized fertilizer and herbicide application controls.

<b>Table III.E.18. Inventory and Status of MCPS Facilities Covered under Maryland General Permit for Discharges of Stormwater Associated with Industrial Activity</b>				
<b>Facility Name, Responsible Agency</b>	<b>Application / NPDES Number</b>	<b>Watershed / Facility Area</b>	<b>Current Status</b>	<b>Current SWPPP Status</b>
Bethesda Fleet Maintenance, Bethesda Facilities Maintenance Depot	12SW0524 / MDR000524	Cabin John Creek 02140207 / 6.2 acres	NOI accepted for registration under NPDES General Permit until December 31, 2018	Updated FY14
MCPS Facilities Maintenance Depot	12SW3325 / MDR003325	Seneca Creek 02140208 / 34.4 acres	NOI accepted for registration under NPDES General Permit until December 31, 2018	Updated FY18
Randolph Fleet Maintenance, Randolph Facilities Maintenance	12SW0522 / MDR000522	Anacostia River 02140205 / 9.3 acres	NOI accepted for registration under NPDES General Permit until December 31, 2018	Updated FY14
Shady Grove Fleet Maintenance, Shady Grove Facilities Maintenance	12SW0523 / MDR000522	Rock Creek- 02140206 / 15.0 acres	NOI accepted for registration under NPDES General Permit until December 31, 2018	Updated FY14
West Farm Transportation Depot	12SW1258 / MDR001258	Anacostia River 02140205 / 5.06 acres	NOI accepted for registration under NPDES General Permit until December 31, 2018	Updated FY14
Clarksburg Fleet Maintenance, Clarksburg Facilities	12SW0525 / MDR000525	Seneca Creek 02140208 / 15.11 acres	NOI accepted for registration under NPDES General Permit until December 31, 2018	Updated FY14

#### iv. Coordination with Other Montgomery County Agencies

As co-permittee on the Countywide MS4 Permit, MCPS worked with the County environmental agency to improve project communication and coordination as follows:

- In 2010, MCPS signed a new Memorandum of Understanding with County DEP, outlining the various responsibilities of both agencies under the new MS4 Permit.
- Since 2012, MCPS has participated in County task forces on low-impact development and MS4 coordination.



- As a co-permittee, MCPS participated in the U.S. Environmental Protection Agency inspection of the County MS4 Program in 2014.
- In 2020, MCPS participated in the County’s Salt Wise Initiative.
- MCPS worked with the County to promote *RainScapes for Schools*, which is managed by the County.
- MCPS provides annual reports to County agencies on mandatory and nonmandatory recycling activities.

MCPS has worked very closely with WSSC on their Fats, Oils, and Grease Program to reduce and eliminate SSOs that could potentially originate from MCPS sites and negatively impact stream water quality. As part of this process, MCPS has scheduled cleaning grease interceptors, provided training, and implemented BMPs in all schools.

## E.6 Road Maintenance

### 6. Road Maintenance

The County shall continue to implement a program to reduce pollutants associated with road maintenance activities. The road maintenance program shall include:

- a. Street sweeping;
- b. Inlet cleaning;
- c. Reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with roadside vegetation management through increased use of integrated pest management (IPM); and
- d. Controlling the overuse, and to the MEP, reducing use of winter weather deicing materials through continual testing and improvement of materials, equipment calibration, employee training, and effective decision-making.

The County shall report annually on the changes in practices and the pollutant reductions resulting from the road maintenance program.

The Permit requires the County to reduce pollutants associated with roadways by implementing a road maintenance program that includes sweeping streets; cleaning inlets; reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with roadway vegetation management; and controlling the overuse of winter-weather deicing materials. This section describes pollutant-reduction methodologies related to the County's ongoing road maintenance programs. The overall goal of these activities is to reduce the amount of trash and sediment from entering streams and waterways, improve street aesthetics, and aid in meeting the State environmental goals.

### E.6.a Montgomery County Street Sweeping Program

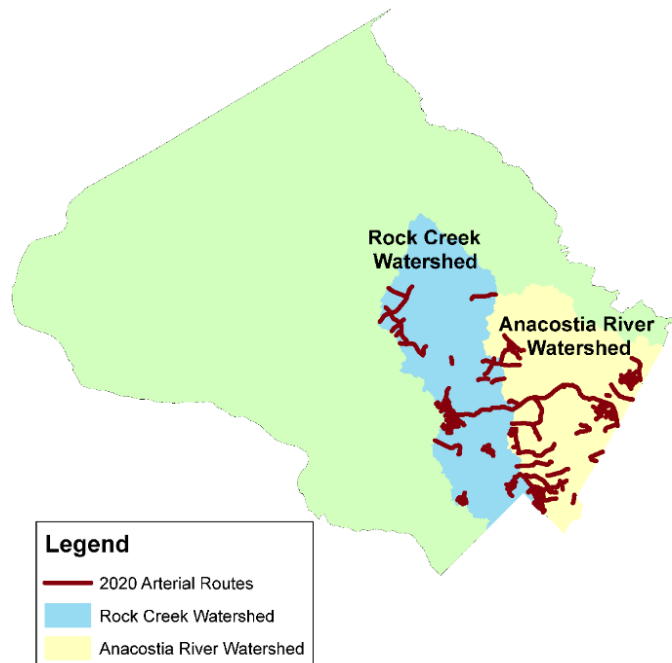
#### i. Miles Swept

The County's street sweeping program continues to help reduce pollutants associated with road maintenance activities, although the program was smaller in 2020 than in past years. Montgomery County Departments of Transportation (DOT) and Environmental Protection (DEP) jointly oversee the street sweeping program that is funded entirely by DEP. Generally, DOT administers countywide street sweeping on residential routes, and DEP administers arterial route sweeping. Arterial routes are larger roads with more commercial activity, traffic, and observed trash. Countywide sweeping was canceled in FY20 for two reasons. First, a relatively small amount of granular salt was used on the roads over the winter. Second, the COVID-19 pandemic response meant fewer staff were available to oversee operations. DOT concluded that countywide sweeping was not feasible, cost-effective, nor worth the risk of COVID-19 exposure. DOT anticipates resuming countywide sweeping program in 2021.

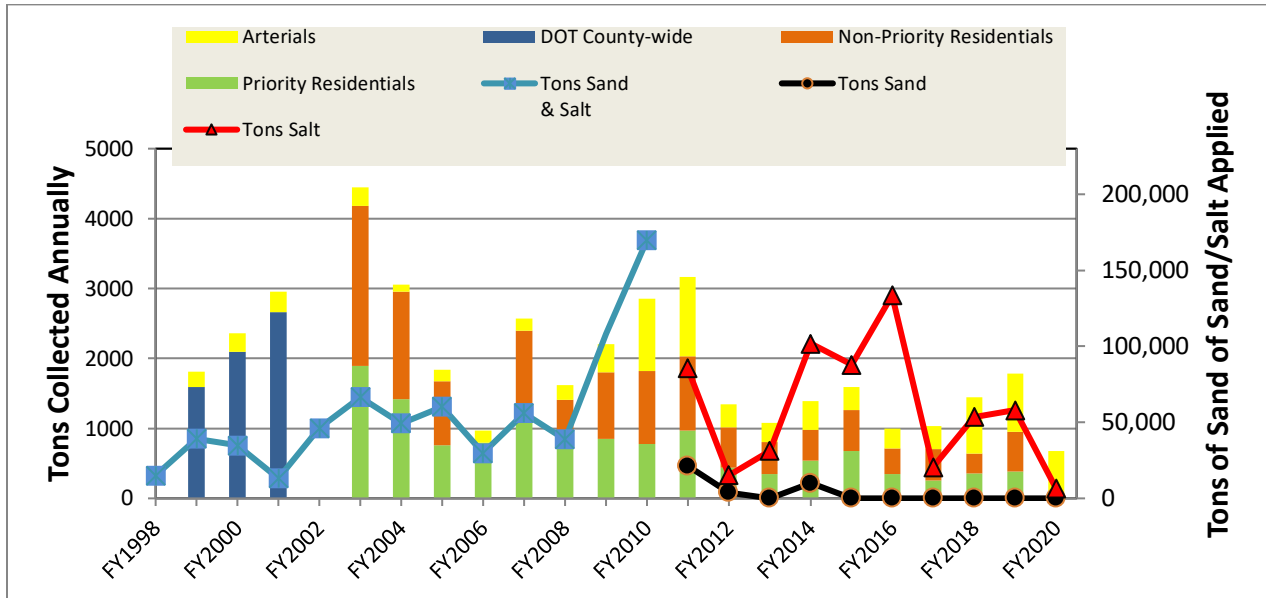
DEP finances and manages sweeping arterial routes, and this work continued as scheduled. Arterial routes are generally larger roads with more commercial activity, traffic, and trash. The arterial routes are swept at night when traffic volumes are low. During FY20, DEP swept the arterial routes 24 times. In November 2019, the routes were reduced from 370.3 to 227.2 miles per cycle as a cost-saving measure. Figure III.E.7 shows the 227.2 miles of arterial routes swept over the course of FY20.

The sweeping is conducted to maximize environmental benefits in the Rock Creek and Anacostia River Watersheds, which both have total maximum daily loads (TMDLs) for sediment and phosphorus. Approximately 54.9 percent of the mileage is in the Anacostia River Watershed, and 45.1 percent is in the Rock Creek Watershed. The program swept 6,598 curb miles of roadway and collected 680.5 tons of material, which was a 19-percent decrease from the 836 tons of material collected in FY19.

Figure III.E.8 shows tons of materials removed annually by street sweeping from FY99 to FY19 in the priority and nonpriority residential areas and arterials. This figure also illustrates tons of salt, sand and salt, and sand only tons applied during the winter period. From FY98 through FY10, data on salt and sand applied during the winter period are presented, however, data for FY09 were not reported. Starting in FY11, separate data for salt and sand application sand were available and also presented on this figure. Salt application was relatively high between FY14 and FY16 but has been lower since. Sand has not been widely used since FY14 (Table III.E.22). As previously stated, no residential sweeping was conducted in FY20, thus, only arterial sweeping is shown on Figure III.E.8.



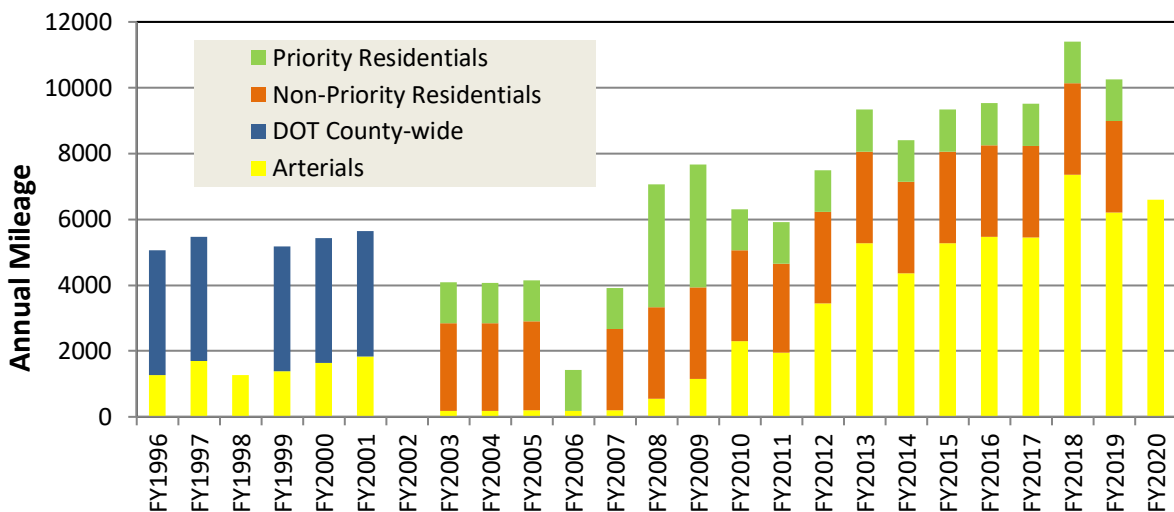
***Figure III.E.7. FY20 Montgomery County Arterial Street Sweeping Routes***



**Figure III.E.8. Tons of Material Applied during Winter Activities and Collected by Street Sweeping (FY98 through FY20)**

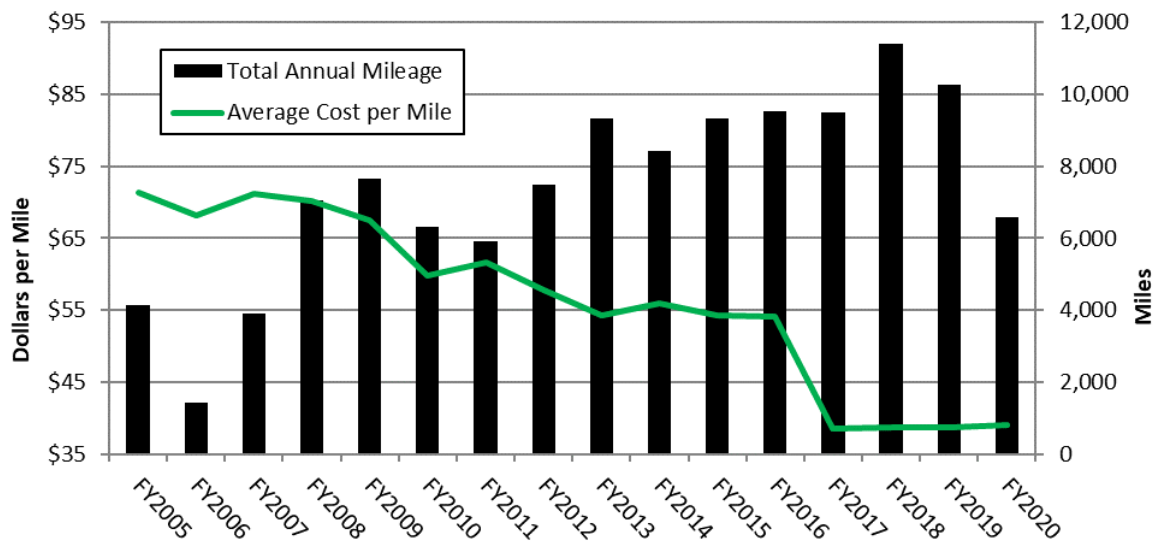
## ii. Materials Removed

Figure III.E.9 shows the annual street sweeping mileage from FY96 through FY20. Data from this time period represent arterials and DOT countywide area. Starting in FY03, mileage of street sweeping on residential routes, both priority and nonpriority, along with arterials are presented. As previously stated, no residential sweeping was conducted during FY20 (Section E.6.a.i).



**Figure III.E.9. Annual Montgomery County Street Sweeping Mileage, FY96 through FY20**

Figure III.E.10 shows the annual street-sweeping mileage and average cost per mile for the program from FY05 through FY20. The cost of the program decreased over time with a notable decline in FY17 mainly due to a new contractor.



**Figure III.E.10. Montgomery County Street Sweeping Mileage and Average Cost, FY05 through FY20**

### iii. Calculating Equivalent Impervious Acreage and Pollutant Reductions for TMDL Watersheds and Countywide

In FY12, the County began sweeping 229 miles of roadway identified as arterial routes twice monthly. The routes were realigned in FY15 and mileage was added in FY18. In FY20 the mileage again approximated the FY15 level. Table III.E.19 shows the miles of arterial routes, along with the percent of the total arterial routes, currently swept in two watersheds. The arterial routes were swept 24 times. This sweeping frequency allows the County to take credit for stormwater control for impervious acreage equivalent and stormwater pollutant load reductions in the swept watersheds, both of which have approved TMDLs. The credits were calculated using MDE's *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated*, Table 3.E (August 2014). MDE is in the process of updating the guidance, so these credits are subject to change.

MD8DIG	Watershed	Miles Swept Per Cycle	Percent	Impervious Area Credit (acres)	TN Removal (pounds)	TP Removal (pounds)	TSS (tons)
2140205	Anacostia	124.7	54.9	149	1,307	523	78.4
2140206	Rock Creek	102.5	45.1	123	1,075	430	64.5
<b>Grand Total</b>		<b>227.2</b>	<b>100.0</b>	<b>272</b>	<b>2,382</b>	<b>953</b>	<b>142.9</b>

Note: Total amount of material collected from Arterial Routes in FY20 = 680.5 tons

IA = impervious acre(s)

MD8DIG = State of Maryland 8-digit watershed code

TN = total nitrogen

TP = total phosphorus

TSS = total suspended solids



## E.6.b Inlet Cleaning

Table III.E.20 summarizes the DOT inlet cleaning program from FY11 through FY20. Material is removed from inlets and storm drains using a vacuum truck or manual labor. Material removed via a vacuum truck is disposed of at the Oaks Leachate Treatment Facility, all other litter and debris are taken to the Shady Grove Transfer Station.

<b>Table III.E.20. DOT Inlet Cleaning, FY11 through FY20</b>					
<b>Year</b>	<b>Inlets Cleaned</b>	<b>Linear Feet Cleaned</b>	<b>Debris Collected (tons)</b>	<b>IA Equivalence Treated</b>	<b>Cost</b>
FY20	114	42,464	*	*	\$466,792
FY19	145	42,366	173	69.2	\$460,458
FY18	550	16,699	158	63.2	\$466,000
FY17	594	40,679	145	58.0	\$512,524
FY16	603	35,792	153	61.2	\$315,165
FY15	2,218	31,180	346	138.4	\$353,226
FY14	648	20,710	217	86.8	\$418,353
FY13	803	15,769	494	197.6	\$246,200
FY12	811	14,382	367	146.8	\$275,392
FY11	1,191	17,604	107	42.8	\$269,593

*Note: The County is reconfiguring its data collection to improve accuracy in anticipation of future guidance on crediting methods.*

## E.6.c Roadside Vegetation Management

Montgomery Weed Control, Inc. conducts the County's State-required roadside weed-spraying program for noxious weeds. Specialized spray equipment achieves cost-efficient control using minimum herbicides. Operational best management practices are always followed, and all personnel employed by Montgomery Weed Control, Inc. are registered with the County as pesticide applicators and trained in compliance with the state Pesticide Applicator's Law. Other than for noxious weed control, the County uses no other pesticides and no fertilizers for roadside vegetation management. Table III.E.21 herbicides applied along County roadways from FY12 through FY20.

<b>Table III.E.21. Herbicide Applied by Montgomery Weed Control Inc. on Montgomery County Rights-of-Way, FY12 to FY20</b>											
<b>Purpose</b>	<b>Herbicide (gallons)</b>	<b>Fiscal Year</b>									
		<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
State-mandated treatment for noxious weeds	Clopyralid	5.20	4.78	4.84	7.35	8.29	5.74	7.89	9.96	5.24	5.7
	Glyphosate	4.55	4.55	4.10	2.58	1.10	2.5	0.14	1.37	2.17	1.1
<b>Program cost (thousand dollars)</b>		22.0	22.0	22.0	22.8	22.0	22.0	22.0	22.0	22.0	32.0

*Note: Herbicide use is directly correlated to growing conditions for each season*

## E.6.d Winter-Weather Deicing Materials Application

DOT plows and salts roads as part of its winter-weather roadway treatment program. The DOT follows the *2020/2021 Maryland State Highway Administration Salt Management Plan*. All application equipment is calibrated once a year. In FY11, DOT launched a new online system to track the status and progress of roadway treatment and plowing during winter-weather events.

During FY12, the snow-tracking application was revised to include salt used per route to identify trends in salt usage and improve salt management. DOT began a salt brine pilot program in 2009 to reduce using salt as a deicing material on 240 lane miles of primary roads. Salt brine is a 23-percent salt solution created in a brine maker and stored in tanks until used. Brine has a freezing point of -6 degrees Fahrenheit (°F) and continues to work after salt loses effectiveness at 20° F. Contractors sprays the salt brine onto highways 2 hours to 2 days before the onset of frozen precipitation to prevent snow and ice from bonding to pavements. During FY19, Montgomery County DOT increased the lane miles for each application of salt brine from 1,100 miles of primary roadways, to 1,600 lane miles, which includes all emergency salt routes; this has resulted in more salt brine usage and a relatively low amount of overall salt usage. In FY20, DOT sprayed a total of 97,097 gallons of salt brine on 1631 lane miles.

Table III.E.22 compares DOT's winter-weather deicing materials use from FY11 through FY20. The amount of salt applied is related to circumstances such as the number of winter events, temperatures, amount of ice, and refreezing. Relatively large amounts of salt were applied during FY14, FY15, and FY16, and these years also had relatively large snowfall totals. Although DOT responded to 11 storms in FY20, the responses were due to forecasted snow or ice projections. The 3-inch County average for the year results from a 5-inch snow total in Damascus and a 1-inch total in Silver Spring. The FY20 average is way below the 24-inch long-term average for Montgomery County. Snowfall has been trending downward for the past few years.

<b>Table III.E.22. DOT Winter-Weather Deicing Material Usage, FY11 to FY20</b>					
<b>Year</b>	<b>Winter Storms</b>	<b>Snow (inches)</b>	<b>Salt (tons)</b>	<b>Sand (tons)</b>	<b>Salt Brine (gallons)</b>
FY11	NR <sup>a</sup>	12.6 <sup>b</sup>	85,600	21,400	NR <sup>a</sup>
FY12	NR <sup>a</sup>	3.7 <sup>b</sup>	15,200	3,800	122,031
FY13	NR <sup>a</sup>	12.7 <sup>b</sup>	31,309	0	93,005
FY14	NR <sup>a</sup>	52.8 <sup>b</sup>	111,787	10,000	121,787
FY15	28	36.9 <sup>b</sup>	87,900	0	36,400
FY16	5 <sup>b</sup>	40.35	133,517	0	43,000
FY17	9	6.36	20,408	0	147,122
FY18	15	16.1	53,479	0	168,000
FY19	13	28	57,692	0	500,000
FY20	11	3.0	6,410	0	97,097

<sup>a</sup> NR = not reported

<sup>b</sup> National Oceanic and Atmospheric Association Local Climatological Data, Washington, D.C., Washington Dulles International Airport

## E.7 Public Education Outreach

### 7. Public Education

The County shall continue to implement a public education and outreach program to reduce stormwater pollutants. Outreach efforts may be integrated with other aspects of the County's activities. These efforts are to be documented and summarized in each annual report. The County shall within one year of permit issuance, develop a work plan to implement a public outreach and education campaign with specific performance goals and deadlines to:

- a. Establish and publicize a compliance hotline for the public reporting of suspected illicit discharges, illegal dumping, and spills.
- b. Provide information to inform the general public about the benefits of:
  - i. Increasing water conservation;
  - ii. The importance of community stormwater management facility maintenance;
  - iii. Proper erosion and sediment control practices;
  - iv. Increasing proper disposal of household hazardous waste;
  - v. Improving lawn care and landscape management (e.g., the proper use of herbicides, pesticides, and fertilizers, ice control and snow removal, cash for clippers, etc.);
  - vi. Car care;
  - vii. Improving private well and septic system management; and
  - viii. Proper pet waste management.
- c. Provide information regarding the following water quality issues to the regulated community when requested:
  - i. NPDES permitting requirements;
  - ii. Pollution prevention plan development;
  - iii. Proper housekeeping; and
  - iv. Spill prevention and response.
- d. Provide information regarding trash and littering as prescribed in Part III.E.4 above.

The County maintains a robust public outreach and education program to reduce stormwater pollution and continues to operate and expand those program activities. The public outreach and education campaigns for FY20 are featured in this section, as well as discussed in other sections throughout this report. In mid-March 2020, the County stopped holding in-person outreach events due to the COVID-19 pandemic; instead, DEP switched its engagement to online, virtual, and video communications. The move to digital and virtual outreach during the pandemic is highlighted throughout this section.

### E.7.a Compliance Hotline and Communication Mechanisms

The County continues to use environmental education, outreach, and stewardship through various communication mechanisms to work with and support local citizens to address stormwater quality issues

and the MS4 Permit requirements. For this effort, the County uses multimedia approaches and various community platforms to involve most audiences, including citizens, culturally diverse communities, schools, faith communities, businesses, and organizations, to create a campaign to educate them on environmental issues and implement various practices. The following subsections summarize the communication mechanisms for public reporting of suspected illicit discharges, illegal dumping, and spills.

#### **i. Montgomery County Call Service Center MC311**

The Permit requires the County to establish and publicize a compliance hotline for public reporting of spills, illegal dumping, and suspected illicit discharges. The County meets this requirement by maintaining a call center that allows citizens to call one number (311) for all concerns in the County, including surface water quality concerns. More information can be found on the 311 home page.<sup>1</sup>

#### **ii. My Green Montgomery**

During FY20, the *My Green Montgomery* online education portal<sup>2</sup> continued as the news and communication arm of the DEP for its long-term *Montgomery County Coordinated Implementation Strategy* (the Strategy). During the year, 160 blogs were posted on the website, representing a 38-percent increase in posts. The *My Green Montgomery* website had 50,438 users and 189,528 page views during FY20.

#### **iii. Newsletters**

The *My Green Montgomery* monthly e-newsletter continued using the GovDelivery platform during FY20 and recorded a decrease in subscribers when compared with FY19 (6,109 in FY19 to 4,391 in FY20). This decrease likely resulted from a pause in newsletter distribution during a staff transition. The RainScapes section of the newsletter, which provides outreach and voluntary rebates for green infrastructure installations, continues to issue e-newsletters.

*RainScapes Gazette* and *RainScapes Gazette for Landscape Professionals* continued to be a communication tool that the RainScapes program could reliably use to share information about this and other DEP programs. These quarterly newsletters reach and update a broad range of both County and regional subscribers. Currently, *RainScapes Gazette* has 5,458 subscribers and *RainScapes Gazette for Landscape Professionals* has 3,501 subscribers. FY20 numbers represent an increase from FY19 by 14 percent for the *RainScapes Gazette* and 23 percent for the *RainScapes Gazette for Landscape Professional*.

#### **iv. DEP Website**

DEP general websites<sup>3</sup> had 182,076 visitors with 409,144 page views; this reflects a 26-percent increase in visitors and a 17-percent increase in page views compared with FY19. Overall, these categories remained fairly consistent. The top water website pages remained the same as the previous year: public water supply, well and septic, RainScapes, and stormwater maintenance. DEP also created new salt management webpage,<sup>4</sup> which received good traction as being the website's 12th most-viewed page.

<sup>1</sup> <http://www3.montgomerycountymd.gov/311/Home.aspx>

<sup>2</sup> <http://www.mygreenmontgomery.org>

<sup>3</sup> [www.montgomerycountymd.gov/dep./green./water./lawns.and./bag](http://www.montgomerycountymd.gov/dep./green./water./lawns.and./bag)

<sup>4</sup> <https://montgomerycountymd.gov/water/education/winter-salt-management.html>

## v. Social Media

The My Green Montgomery social media platform was officially changed to the official platform of DEP in spring 2019. DEP now has 6,261 followers, user engagement of 59,693, and more than 2 million impressions across all platforms. A breakdown of the social media platforms results in 2,364 Facebook followers, with engagements and impressions of 44,748 and 984,472, respectively; 2,549 Twitter followers, with engagement and impressions of 10,328 and 806,032, respectively; and 1,348 Instagram followers, with engagement and impressions of 4,617 and 236,529, respectively (Table III.E.23). Water-focused content was featured on all platforms throughout FY20. Water-specific campaigns included a Salt-Wise campaign and a Holiday Gift Outside the Box campaign focused on recycling, reusing, and reducing plastic bag usage during the holidays.

Table III.E.23. Areas of Significant Social Media Increases in FY20	
Activity and Communication Mechanisms	Percent Increase
DEP website users	26
DEP website page views	17
<i>My Green Montgomery</i> website users	90
<i>My Green Montgomery</i> page views	243
Facebook followers	32
Twitter followers	22
Instagram followers	127
Facebook engagement	598
Twitter engagement	91
Instagram engagement	364
Facebook impressions	-32
Twitter impressions	146
Instagram impressions	2,716
Flickr account	22
<i>My Green Montgomery</i> blogs	38
YouTube videos	25
YouTube subscribers	24

The end of FY20 proved to be unique as the COVID-19 pandemic surfaced and the typical way of conducting outreach had to be modified. All face-to-face outreach events were canceled beginning March 12, and many were replaced with a digital platform. Social media were used to a much heavier extent. In celebration of Earth Month in April and Chesapeake Bay Awareness Week in June, DEP strategically emphasized Facebook Live events and digital events on Zoom and Microsoft Teams. Statistics for these two efforts garnered 9,599 and 26,965 impressions, reach of 8,546 and 15,331 and engagement of 1,284 and 1,437, respectively.

At the end of FY20, the DEP Flickr website had more than 10,084 photographs, which is a 22-percent increase from FY19, with 42 followers. DEP's YouTube channel has more than 2,500 subscribers and

149 videos, which is a 25-percent increase from FY19; this increase includes videos posted in Spanish. More information about these activities can be found on DEP’s social media accounts.

#### **vi. Montgomery County GreenFest Website**

Due to the COVID-19 pandemic, the Montgomery County GreenFest, typically held annually in April, was canceled in FY20. The planning stages were far too advanced to convert the event to an online event.

### **E.7.b Summary of FY20 Public Education and Outreach**

#### **i. Summary of FY20 Activities**

During FY20, DEP events continued to focus on targeting specific audiences, increasing stormwater awareness, encouraging directionally corrective measures, and establishing baseline information through surveys; the baseline information will help guide follow-up measures. DEP will continue to search for ways to estimate pollutant reductions from behavior change, beyond those documented in the Strategy, or default to criteria when established by MDE. During FY20, DEP completed a watershed outreach communication task order to reevaluate their outreach programming.

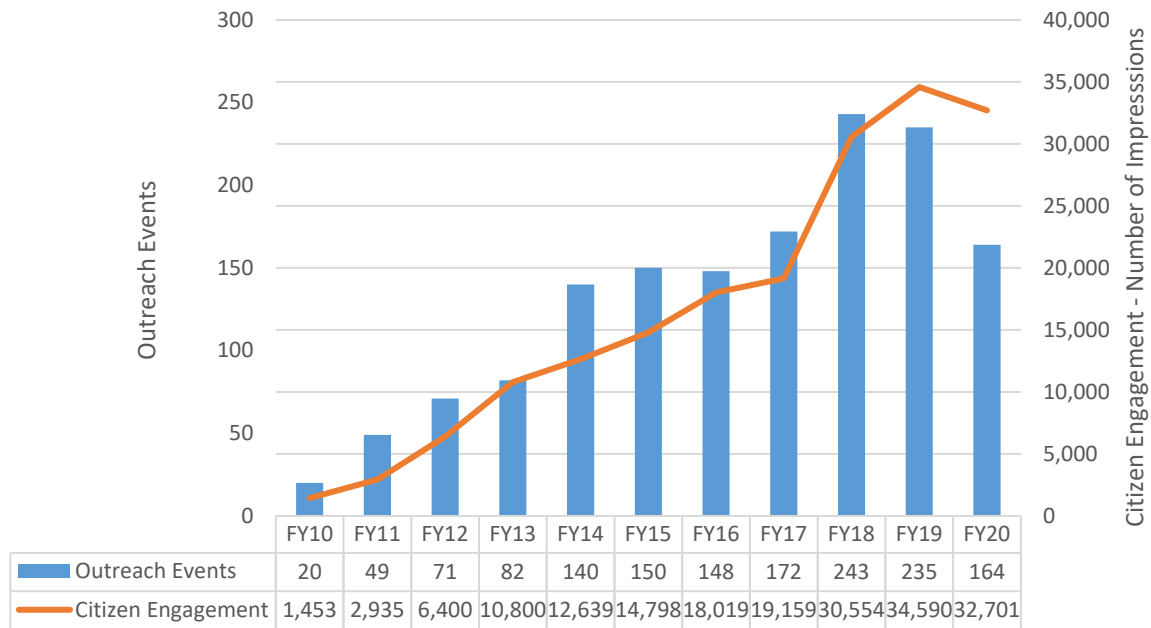
The DEP hosted or participated in 164 outreach events during FY20; 32,701 attendees were directly educated through these outreach efforts. Although events and engagement decreased when compared with FY19, this timeframe includes cancelling all in-person outreach events since March 12, 2020 due to the COVID-19 pandemic. Canceled events include those on Earth Day and GreenFest, which would typically garner high attendance, citizen interaction, and education opportunities.

DEP staff responded to the unprecedented challenge by adapting their outreach approach. Staff increased the use of social media, live and recorded events, and webinar platforms, such as Zoom and Microsoft Teams. During the past 10 years, staff hosted or participated in more than 1,400 events, workshops, training sessions, or engagement activities, resulting in educating more than 184,000 citizens. Figure III.E.11 illustrates the steady increase in DEP’s outreach activities throughout the most recent Permit cycle. Figures III.E.12 and III.E.13 graphically break down stormwater outreach impressions and events, respectively, in various watersheds in FY20. DEP continues to conduct most outreach activities in the Anacostia River and Rock Creek Watersheds, which follows the intent of the Strategy. Table III.E.23 summarizes FY20 areas of significant documented outreach increases from FY19. More details on each of these programs can be found in the following subsections.

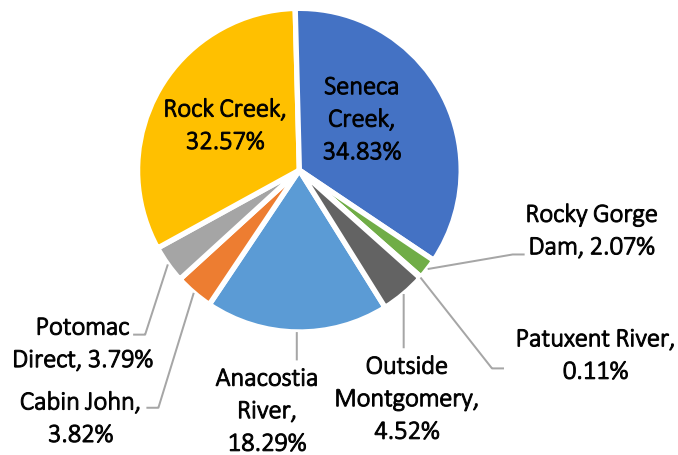
#### **ii. Outreach Database**

DEP continued using an outreach database to track outreach activities across multiple DEP programs, including watershed restoration. The database increases reporting efficiency by standardizing data required for each outreach effort. DEP planners use the database to coordinate events that occur in close proximity or timeframes, allowing for enhanced outreach. Metrics tracked include event type and location, watershed, event date, number of impressions, volunteer participation, topics covered, and media coverage.

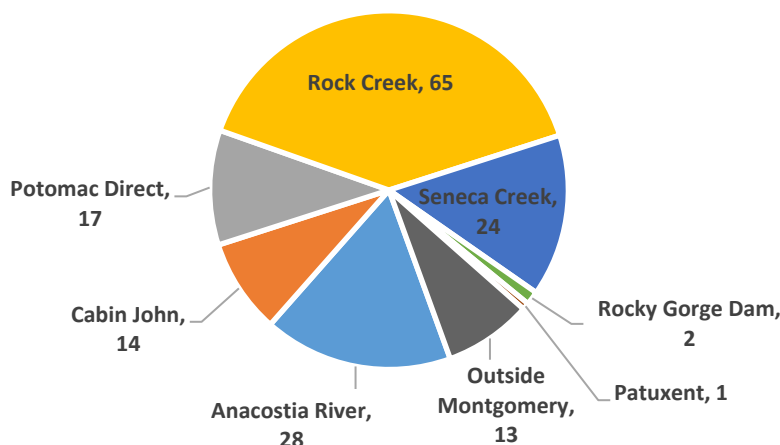




**Figure III.E.11. Outreach Events and Citizen Engagement FY10 through FY20**



**Figure III.E.12. Outreach Impressions by Watershed in FY20**



**Figure III.E.13. Outreach Events by Watershed in FY20**

### iii. Focused Efforts to Provide Outreach to Culturally Diverse Communities

As of FY20, the population in Montgomery County increased 8.2 percent since 2010. According to the U.S. Census Bureau, 42.9 percent of the population identified themselves as white, non-Hispanic. Hispanic, and African-American populations were both listed as 20.1 percent, and the Asian population remained the same at 15.6 percent.<sup>5</sup> Approximately 40.6 percent of households speak a language other than English in the home. DEP recognizes the need to develop outreach targeted to the County's increasingly diverse demographics and provide translation services for its public outreach materials. DEP also provides on-site translations at DEP restoration projects and during enforcement.

## E.7.c Public Outreach and Stewardship Work Plan Implementation

The Permit requires the County to develop and implement a public outreach and education program that focuses on stormwater pollution reduction. To meet this requirement, the County developed a Public Outreach and Stewardship Work Plan (POSWP) as part of the County's overall Strategy. The POSWP includes practice sheets for eight specific outreach campaigns, such as pet waste management, lawn stewardship, antilittering, stormwater awareness, volunteer program development, riparian reforestation, roof runoff reduction, and parking lot recharge. Each practice sheet identifies performance goals, key messages, intended outcomes, targeted audiences, potential partnerships, delivery techniques, start-up costs, measurement objectives, timelines, and milestones from start up through 2025. The practice sheets, along with outreach recommendations developed for each County Watershed Implementation Plan, make up the POSWP, which can be found online.<sup>6</sup>

During FY20, DEP completed a watershed outreach communication task order to reevaluate their outreach programming. DEP will be analyzing the final product and working towards implementation in FY21.

<sup>5</sup> <http://www.census.gov/quickfacts/table/PST045215/24031.00>

<sup>6</sup> <https://www.montgomerycountymd.gov/DEP/Resources/Files/ReportsandPublications/Water/Countywide%20Implementation%20Strategy/Watershed-Outreach-Plan-2012.pdf>

**i. Pet Waste Management Program (POSWP Priority Practice #1)**

Since DEP initiated a pet waste management pilot program in FY14 to help reduce bacterial levels in watersheds, a total of 42,920 pounds of pet waste have been collected through 156 stations. During FY20, DEP worked with 19 communities to remove pet waste and assist in meeting bacteria and nutrient total maximum daily loads in Montgomery County watersheds; of the 19 communities, 7 completed their 1-year station maintenance program, and 12 new communities were added to the program during FY20. Pet waste collected during FY20 decreased 18 percent when compared with FY19. This decrease can be attributed to working with fewer homeowner’s associations (HOAs) during FY20 due to the COVID-19 pandemic. In addition, the number of households per HOA that DEP worked with was fewer than previous years.

Although the program continued to function by maintaining pet waste stations during the pandemic, no HOAs on the waiting list were added until late May 2020. From March through mid-May, site visits were suspended. When restrictions were lifted in mid-May, DEP resumed its site visits to add HOAs to the program. Since the program expanded in FY17, it has continued to be popular. The program covers the entire county, outside of municipalities, and a waiting list exists. An additional \$20,000 was augmented to the FY20 pet waste program budget to assist with adding new communities and reducing the backlog of communities on the waiting list.

During FY20, 10,549.2 pounds of pet waste were removed through 59 pet waste stations, serving 5,310 households in Montgomery County. The stations prevented 110.1 trillion fecal coliform bacteria, 606.6 pounds of nitrogen, and 79.1 pounds of phosphorous from potentially entering local streams. The pet waste collected, and pollutants reduced by watershed are shown in Table III.E.24.

**Table III.E.24. Pet Waste Collected and Fecal Coliform, Nitrogen, and Phosphorus Reduced by Watershed during FY20**

<b>Watershed</b>	<b>Number of Stations</b>	<b>Pet Waste Collected (pounds)</b>	<b>Fecal Coliform Reduced (trillions)</b>	<b>Nitrogen Reduced (pounds)</b>	<b>Phosphorus Reduced (pounds)</b>
Anacostia River	4	634.9	6.6	36.5	4.8
Cabin John Creek	6	1,574.5	16.4	90.5	11.8
Patuxent	6	877.1	9.2	50.4	6.6
Rock Creek	11	926.8	9.7	53.3	7.0
Seneca Creek	32	6,535.9	68.2	375.8	49.0
<b>Total:</b>	<b>59</b>	<b>10,549.2</b>	<b>110.1</b>	<b>606.6</b>	<b>79.1</b>

During FY20, 12 new communities were added to the program and 7 communities “graduated” from it by completing the County’s 1-year program requirements. The communities decide whether or not to “adopt” the stations after the first year; adoption entails keeping the station and taking over its maintenance. Of the 59 program stations maintained during FY20, 37 stations were installed in FY20, and 22 stations were installed in FY19. Of those installed in FY19, all 22 stations were adopted. Following are the 7 communities that adopted the 22 stations:

- Champlain at Environ HOA—three stations
- Edson Park Condominiums—one station
- Glenfield North HOA—two stations
- Herons Cove Condominiums—five stations
- Inverness HOA—four stations
- Northgate Homes Corporation—six stations
- Patton Ridge Homes Corporation—one stations

Table III.E.25 lists communities participating in the program and the pounds of pet waste collected at their stations.

<b>Table III.E.25. Community Participants in the Pet Waste Program in FY20</b>					
<b>Community Name</b>	<b>Homes</b>	<b>Watershed</b>	<b>City</b>	<b>Stations</b>	<b>Pounds Collected</b>
Glenfield North HOA	60	Anacostia	Silver Spring	2	326.1
Oak Terrace	68	Anacostia	Burtonsville	2	308.8
Inverness HOA	255	Cabin John	Potomac	4	1,288.6
Montgomery right-of-way	168	Cabin John	Bethesda	2	285.9
Champlain at Environ HOA	142	Patuxent	Olney	3	776.0
Fair Hill	156	Patuxent	Olney	3	101.1
Devonshire East	134	Patuxent	North Bethesda	4	26.5
Edson Park Condominiums	48	Rock Creek	Rockville	1	209.9
Montgomery Chase Condominiums	158	Rock Creek	Silver Spring	3	138.0
Redland Crossing	170	Rock Creek	Derwood	3	552.4
Clopper's Mill West	579	Seneca Creek	Germantown	5	1,763.1
Edinburgh Village	343	Seneca Creek	Gaithersburg	4	37.8
Herons Cove Condominiums	400	Seneca Creek	Montgomery Village	5	505.1
Kingsbridge	241	Seneca Creek	Damascus	1	486.2
Manor Ridge	82	Seneca Creek	Gaithersburg	2	155.5
Northgate Homes Corporation	1,149	Seneca Creek	Montgomery Village	6	2,200.4
Patton Ridge Homes Corporation	1,070	Seneca Creek	Montgomery Village	1 <sup>a</sup>	91.9
Summerfield Crossing	255	Seneca Creek	Boyd's	5	829.8
North Lake Woods	221	Seneca Creek	Germantown	3	466.1
<b>Total:</b>	<b>5,699</b>	<b>-</b>	<b>-</b>	<b>59</b>	<b>10,549.2</b>

<sup>a</sup> Five stations were adopted by Patton Ridge Homes Corporations in FY19, and a sixth station was installed later due to issues with the location of installation. This station finished its 1-year term with the program in FY20.

At the end of the 12-month program, each community received a report with pre- and post-surveys, along with pet waste collection weights for each of their stations for the entire year. Based on the data and surveys, the communities then decided whether or not to adopt the stations. DEP maintains contact with the graduated communities that are maintaining their programs to provide outreach materials as needed.

DEP continued to educate County residents about the importance of picking up pet waste by distributing information at festivals in the fall and via social media after COVID-19 prevented in-person outreach. Figure III.E.14 shows a sample social media post related to pet waste accompanied with message about the importance collecting pet waste; the image was accompanied with the following message: “They would pick up after themselves. Pet waste contains bacteria, please pick up after your dog. Scoop it, bag it, trash it.”



**Figures III.E.14. Sample Pet Waste Social Media Posts**

Lawn signs created in FY16 and translated to Spanish in FY18 were distributed to homeowners, HOAs, schools, and commercial properties interested in placing the signs in green areas. Overall, 200 lawn signs were distributed during FY20: 150 in English and 50 in Spanish. Table III.E.26 summarizes the number of pet waste stations and waste collected by watershed since the program began in FY14.

Table III.E.26. Summary of the Pet Waste Program FY14 to FY20							
Fiscal Year	Watersheds						
	Anacostia	Cabin John	Patuxent	Potomac Direct	Rock Creek	Seneca Creek	Total
Number of Stations (Stations typically overlap multiple FYs)							
2014	N/A	N/A	N/A	N/A	7	N/A	7
2015	11	N/A	N/A	N/A	10	N/A	21
2016	16	N/A	N/A	N/A	16	N/A	32
2017	5	N/A	N/A	N/A	4	N/A	9
2018	4	3	N/A	6	6	40	59
2019	6	7	3	6	4	52	78
2020	4	6	6	0	11	32	59

**Table III.E.26. Summary of the Pet Waste Program FY14 to FY20**

Fiscal Year	Watersheds						
	Anacostia	Cabin John	Patuxent	Potomac Direct	Rock Creek	Seneca Creek	Total
<b>Pounds of Pet Waste Collected</b>							
2014	N/A	N/A	N/A	N/A	1,669	N/A	1,669
2015	932	N/A	N/A	N/A	705	N/A	1,637
2016	2,180	N/A	N/A	N/A	5,631	N/A	7,811
2017	279	N/A	N/A	N/A	446	N/A	725
2018	419	737	N/A	1,103	1,332	4,046	7,637
2019	2,145	868	671	148	233	8,828	12,893
2020	635	1,575	877	0	927	6,536	10,549
<b>Total pounds collected</b>	<b>6,590</b>	<b>3,180</b>	<b>1,548</b>	<b>1,251</b>	<b>10,943</b>	<b>19,410</b>	<b>42,921</b>

N/A = not applicable, program was not offered in that watershed for the FY.

## ii. Innovative Stormwater Management Outreach and Stewardship (POSWP Practice #4)

This practice focuses on promoting public understanding of and support for stormwater management (SWM) practices, particularly environmental site design (ESD) and watershed restoration. This practice also includes creating new programming and initiatives intent on encouraging and evaluating social behavior change.

### (a) Caching the Rain Stormwater Awareness Program

The *Caching the Rain* Geocaching Trail is a scavenger hunt-type geocaching activity with a focus on stormwater pollution outreach. DEP established geocaches at six locations, primarily in the lower, more urban part of the county near stormwater facilities. Participants answer stormwater-related trivia questions at each station and verify their answers in a survey once they complete the geotrail. The six locations have been visited collectively 1,564 times, representing an 11.7-percent increase from FY19. Table III.E.27 summarize the cumulative surveyed changes since the program began in FY14 in awareness of participants after completing the Caching the Rain geotrail for specific topic areas.

**Table III.E.27. Geocaching the Rain Stormwater Awareness Program Statistics**

Topic (awareness)	Increased Awareness after Geotrail Completion (percent)
Awareness of local watersheds	89.4
Knowledge of local stormwater facilities	54.4
Behaviors and/or action steps for environment improvement	47.75
Stormwater pollution knowledge	42.4



Following are other facts about the geocaching program:

- A total of 178 citizens have completed the geotrail and received a souvenir coin since the program was launched in FY14.
- The *Caching the Rain* geotrail has been “favorite’d” and shared by participants 66 times and has a completion rate of 80 percent.
- Of the behaviors and/or action steps the participants learned about during the geotrail, 63 percent said they would be highly interested and/or likely to add a RainScapes practice to their property, and 15 percent indicated they currently participate in the program.
- Nearly 42 percent of participants currently pick up after their pets, which is in line with other studies; 12 percent indicated they would be more willing to do so after participating in the geotrail.
- A total of 48 percent participants were willing to reduce the amount of fertilizer and pesticides they use on their property, and 31 percent indicate they have reduced their use of fertilizers and pesticides already.
- A total of 48 percent of participants were willing to plant a native tree on their property, and 32 percent stated they have personally planted trees.
- A total of 46 percent of participants stated they would be likely to volunteer for an environmental cause.
- A total of 82 percent of participants stated they recycle regularly, and 16 percent indicated they would be more willing to properly recycle after participating in the geotrail.

*(b) Watershed Group Capacity Building*

DEP did not conduct capacity building efforts in FY20, but the department did provide limited support. Watershed groups remained focused on continuing their efforts to assist in meeting Permit requirements. Due to the COVID-19 pandemic, DEP successfully conducted their first virtual happy hour with the organizations during Chesapeake Bay Awareness Week.

*(c) Watershed Group Accomplishments*

During FY20, nine watershed groups actively recruited members and conducted special activities, including educational events, roadway and watershed clean-ups, and invasive plant work days. These groups include the Friends of Sligo Creek, Friends of Ten Mile Creek, Neighbors of Northwest Branch, Rock Creek Conservancy, Little Falls Watershed Alliance, Friends of Cabin John Creek, Muddy Branch Alliance, Seneca Creek Watershed Partners, and Watts Branch Alliance.

DEP staff continued collaborating with the local watershed groups and the Stormwater Partners Network to further watershed restoration and green infrastructure education. Watershed groups continue to have an increased presence in the county. Individual outreach activities and reporting data can be found on the watershed groups’ individual websites and Facebook accounts

(d) *Capital Improvement Program Elements Focused on Outreach and Education*

During FY20, DEP conducted a higher degree of outreach on social media and digital platforms such as Zoom and videos in FY20 due to the COVID-19 pandemic. DEP adapted by conducting its first virtual public meeting via Zoom with the residents of Glenmont Forest, who will be receiving a Green Streets project during FY21. A local resident also requested to conduct a Suburban Stormwater Runoff photo essay;<sup>7</sup> the essay included the Flint's Grove and Falls Reach projects to better illustrate to residents the impact of stormwater runoff and how DEP works to reduce its effects.

**iii. Stream Stewards Outreach and Stewardship Campaign (POSWP Priority Practice #5)**

This practice includes promoting champions for neighborhood streams and increasing community involvement in stormwater issue awareness and watershed protection. Table III.E.28 summarizes the FY20 Stream Steward volunteer activities; these activities were affected by restrictions in place due to the COVID-19 pandemic. No activities other than one virtual training were held during the second half of FY20 from January through June 2020.

<b>Table III.E.28. FY20 Stream Stewards Volunteer Activities June 2019 through December 2019</b>			
<b>Volunteer Opportunity</b>	<b>Number of Hours</b>	<b>Number of Volunteers<sup>1</sup></b>	<b>Service Value<sup>2</sup></b>
Office assistant/intern	205.5	8	\$6,064.31
Orientations and trainings (including FrogWatch)	106	39	\$3,128.06
Watershed ambassador	500.5	120	\$14,769.76
<b><i>Watershed Keeper</i></b>			
DEP clean-ups	100	50	\$2,951
Storm drain art	40	10	\$1,180
<b>Opportunity total:</b>	<b>952</b>	<b>70</b>	<b>\$28,093.52</b>

<sup>1</sup> Total number of volunteers is the total number of individuals that volunteered with DEP throughout the year and not the total number of times they volunteered. Some volunteer participated in multiple events.

<sup>2</sup> Service value per independent sector ([http://www.independentsector.org/volunteer\\_time](http://www.independentsector.org/volunteer_time)) rate of \$29.51 per volunteer hour in Maryland.

To maintain communication with volunteers, DEP emailed quarterly announcements to more than 900 active and potential volunteers; 70 volunteers helped by participating in 15 activities. This level of volunteer involvement is lower than prior years due to the health emergency related to COVID-19, which prevented in-person outreach events. As a result, volunteers participated in activities during only the first half of FY20 (July through December 2019). Many activities scheduled from March through June 2020 were postponed, including activities related to FrogWatch, activities in celebration of Earth month, storm drain painting with the 2020 art contest winners, and Chesapeake Bay awareness month activities during June 2020. Although DEP could not paint storm drains in the second half of FY20, the 2020 storm drain art contest was held virtually, providing DEP with an opportunity to engage with residents during the state's stay-at-home-orders.

<sup>7</sup> <https://macfarlandphoto.net/downloads/Suburban%20Stormwater%20Runoff%201-2-2020.pdf>

As a result of some volunteer activities, DEP created several videos to help with outreach via social media, including a time-lapse video of volunteers painting a storm drain at Plum Gar Community Center. DEP created additional videos of volunteers and shared them via social media as an alternative to restricted in-person outreach.

Following are the FY20 volunteer activities:

- The Montgomery County Agricultural Fair in August 2019.
- DEP clean-up events:
  - Oakview community clean-up on October 5, 2019
  - Townes of Gloucester community clean-up on October 19, 2019
  - Wheaton Branch Stormwater pond clean-up on October 26, 2019 (Figure III.E.15)
- Two training orientations (attended by 78 volunteers) on July 30 and August 3, 2019 to educate volunteers on DEP programs
- Community Service Day October 2019 at Plum Gar Community Center (Figure III.E.16), where volunteers painted a new storm drain (DEP created a time-lapse video of the event and shared it via social media)



***Figure III.E.15. Stream Stewards at Clean-Up Event at Wheaton Branch Stormwater Pond, October 26, 2019.***



***Figure III.E.16. Stream Stewards Painting a Storm Drain in Honor Community Service Day 2020, October 2019***

- During FY20, 13 volunteers helped educate people about not using plastic bags at seven events. They distributed at least 2,500 reusable bags to county residents during the holiday season from November 23, 2019 through December 21, 2019.
- Four volunteers participated in our first FrogWatch virtual training on June 22, 2020. This year, DEP partnered with Friends of Cabin John Creek to conduct outreach related to pet waste. Two volunteers helped distribute pet waste information to veterinary offices, pet stores, and groomers around the Cabin John Watershed. In addition, two volunteers participated in outreach education events at Cabin John Dog Park.

**iv. Watershed Restoration and Outreach Grants (POSWP Priority Practices #4 and #5)**

DEP administered the fifth round of the successful Montgomery County Watershed Restoration and Outreach Grant Program in FY20 for eligible nonprofit organizations. More than \$2.2 million in grant projects have been funded using the Chesapeake Bay Trust (CBT) as a conduit. FY20 marked the fifth time grants were funded to nonprofits through the WQPC funds. Eight grants were funded this fiscal year, totaling 47 grants since inception. All grants from FY14 to FY18 are complete. This year, DEP created a promotional video for potential grantees<sup>8</sup> and worked with CBT to revamp the grant home website<sup>9, 10</sup> to better illustrate the program's successes.

The grant program funds projects that reduce pollutants through community-based restoration practices and focus on public engagement through education, outreach, and stewardship. A program priority focus area is on nonprofit-owned properties with large areas of impervious surfaces. Restoration and outreach projects largely focused on congregations and projects in the Anacostia and Rock Creek Watersheds. Following are FY20 grantee accomplishments:

- **Adventist Community Services and Tartan Ridge HOA by Anacostia Riverkeepers**—These two projects involved installing porous pavement, planting trees, installing a rain garden (Figure E.III.17), and conservation landscaping to address problematic sheet flow and erosion on both properties. Details and final reports are online.<sup>11</sup>



**Figure III.E.17. Adventist Community Services Rain Garden**

- **Carolyn Condominiums by Friends of Sligo Creek**—Residents downslope of Carolyn Condominiums experienced significant stormwater flows and erosion. By partnering with the Friends of Sligo Creek, they partnered with the low-income property to develop a SWM plan and install a demonstration conservation landscape addressing stormwater flows from the west end parking lot

<sup>8</sup> <https://youtu.be/Vw9i6gpjIAo>

<sup>9</sup> <https://cbtrust.org/grants/montgomery-county-watershed-restoration-outreach/projects/>

<sup>10</sup> <https://cbtrust.org/grants/montgomery-county-watershed-restoration-outreach/>

<sup>11</sup> [https://drive.google.com/drive/folders/1udbJiU\\_KAYfCZVCHHmnSHMbMvZVsN7I5?usp=sharing](https://drive.google.com/drive/folders/1udbJiU_KAYfCZVCHHmnSHMbMvZVsN7I5?usp=sharing)



(Figure III.E.18). The project<sup>12</sup> is part of a long-term stormwater solution for this property and the residents living downslope.



*Figure III.E.18. Conservation Landscape Demonstration at Carolyn Condominiums*

- **Sumner Village by Little Falls Alliance**—The Little Falls Alliance partnered with the Sumner Village HOA to address erosion concerns near a small tributary next to the property and improve a walking path (Figure E.III.19).



*Figure E.III.19. Little Falls Alliance and Sumner Village HOA Meeting*

<sup>12</sup> Video and photography at <https://www.youtube.com/watch?v=IbA9b0NzGuE> and <https://store.macfarlandphoto.net/FOSC-Carolyn-Condos/n-fmhBF7/>.

- **Audubon Naturalist Society**—The Audubon Naturalist Society completed their design to replace their parking area with porous pavement for the next phase of their stormwater master plan.<sup>13</sup>
- **Bannockburn Community Center**—The Bannockburn Community Center completed their conservation landscaping plan to address significant stormwater flows and erosion concerns on the property and the affecting downstream neighbors (Figure E.III.20).



**Figure III.E.20. Conservation Landscaping at the Bannockburn Community Center**

#### **v. RainScapes Outreach**

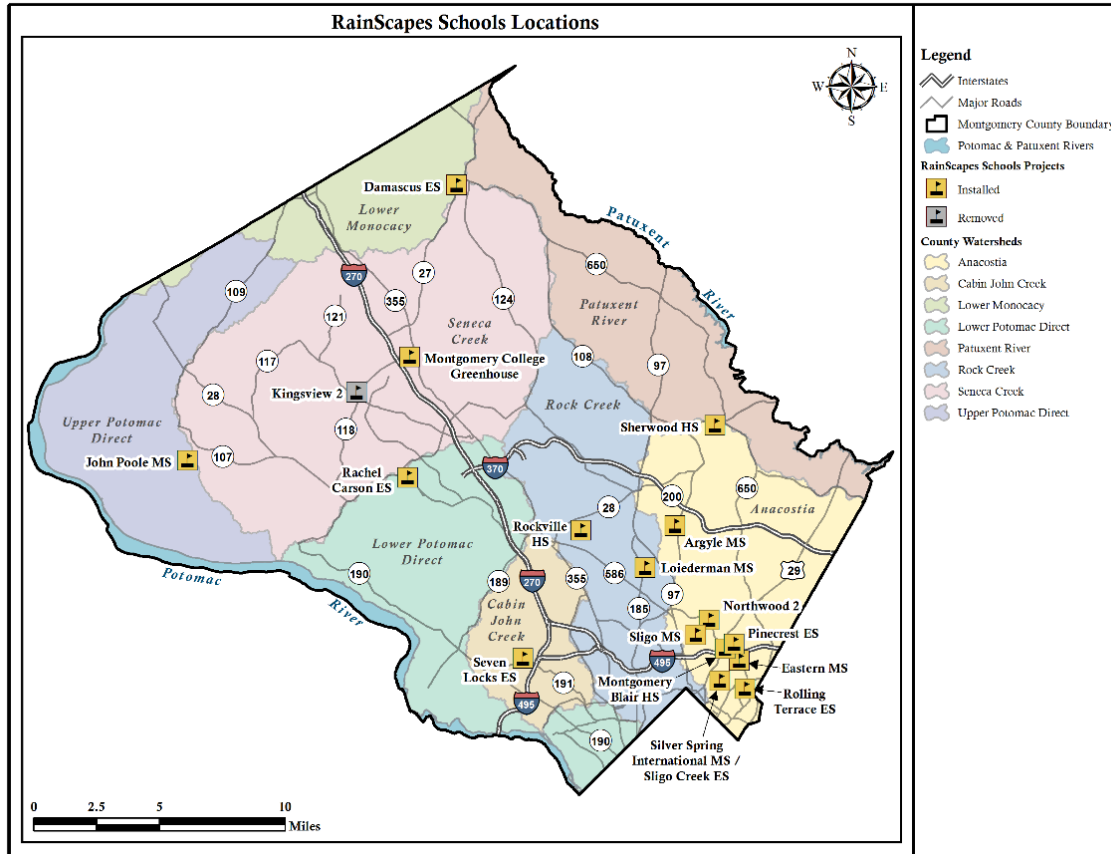
DEP's RainScapes promotes and implements small-scale stormwater control and infiltration projects on residential, institutional, and commercial properties. The multifaceted program is designed to provide information and training to residents and landscape professionals, as well as incentives and project delivery to County sites. The following subsection provides an update on RainScapes outreach efforts for programs in County schools, landscape professionals, and County residents.

##### *(a) RainScapes in Montgomery County Public Schools*

Since FY10, two RainScapes programs are offered through Montgomery County Public Schools (MCPS): *RainScapes for Schools* and *RainScapes for Schools Growing*. *RainScapes for Schools* implements curricular ESD projects on MCPS property. These projects include rain gardens and conservation landscapes and provide runoff reduction while also providing a hands-on location for curriculum lessons. The program has supported 17 school-based projects accessible to students from kindergarten through 12th grade. Locations of participating schools are shown on Figure III.E.21. Most school projects are located in the Anacostia and Rock Creek Watersheds.

<sup>13</sup> <https://drive.google.com/drive/folders/1DR2B4kQ3TwpSgHjCiciWEsuFR48jQu6K>





**Figure III.E.21. RainScapes for Schools Demonstration Projects**

*RainScapes for Schools Growing* provides native plants (see Figure III.E.22) and educational materials to several MCPS high schools and Montgomery College horticulture classes to support instruction on growing and using plants in SWM. Plants from the program have been used in community-based projects and in RainScapes workshops as take-home materials. During spring FY20, nearly 2,200 plants were used as replacement plantings in DEP projects as incentives for online classes and trivia contests and were featured in short demonstration videos available through social media. This program supports the MCPS High School Environmental Horticulture Program, which includes SWM as part of their curriculum; the program is designed to introduce high school students to the job market and range of opportunities available in horticulture and green infrastructure.

*(b) RainScapes Workshops and Professional Training*

During FY20, RainScapes continued to train local designers and contractors with a focus on site assessment, rain garden design, and project requirements for RainScapes Rewards. RainScapes provides training in cooperation with the Landscape Technology Program of Montgomery College for the National Green Infrastructure Certified Professional (NGICP) Program. During FY20, RainScapes offered the Interlocking Concrete Pavement Institute (ICPI) Permeable Interlocking Concrete Paver (PICP) certification course to local contractors wanting to install PICP projects but lacking training in the new virtual format offered by ICPI.



***Figure III.E.22. Plants from the RainScapes Growing Program***

DEP offered the NGICP training in fall 2019 and had a 97-percent pass rate. This course taught professionals about the range of green infrastructure practices and how to assess them for condition and performance; course participants also had both lecture and field educational experiences covering a range of topics pertaining to the operations and maintenance of green stormwater infrastructure (Figure III.E.23).



***Figure III.E.23. Montgomery County Parks Plant Lesson***

On February 21, 2020, RainScapes was a Presenting Sponsor at the Montgomery Parks Green Matters Symposium. The symposium provided the opportunity for RainScapes to reach a critical audience of professionals who are responsible for designing private property landscapes. Many of those attending were installing RainScapes practices or want to learn better ways to manage drainage challenges (Figure III.E.24). The sponsorship allowed the program to reach 350 people in person and provide links to the program through the symposium website.



**Figure III.E.24. RainScapes as Presenting Sponsor at Green Matters Event in Silver Spring**

*(c) RainScapes Training for Communities and Watershed Groups and Grants*

For FY20, DEP RainScapes refined customized outreach approaches to specifically focus on communities such as faith-based organizations, civic associations, HOAs, private pools, and the commercial sector. Congregations and residential communities have expressed more interest in participating in neighbor-to-neighbor outreach approaches. RainScapes materials were widely shared with many community-based audiences—from watershed groups, civic associations, HOA property managers, and faith-based organizations. The Friends of Cabin John Watershed grant supported two workshops that RainScapes staff attended and presented to; another grant project at a local recreational club in the Cabin John Watershed and Bannockburn Club was guided by RainScapes technical support.

Congregational outreach continued both under the auspices of Montgomery County CBT grants and the additional time directly provided by RainScapes. Projects were used by the congregations to share the message that their faith practice supported watershed stewardship as demonstrated with their involvement with RainScapes. The most recent grant support targeted grants in the Sligo Creek Watershed. Several congregations expressed interest in RainScapes in the past, but most are seeking funding through grants rather than a rebate approach. Additional grant-sponsored outreach to congregations about RainScapes is planned for FY21 through watershed group efforts, as well as grant-funded projects. RainScapes, in cooperation with other County agencies, provided information on DEP programs to attendees of the County-sponsored Religious Land Use Working Group workshop in FY20, further extending our congregational initiatives.

*(d) Highlights of RainScapes Outreach in FY20*

RainScapes continued to participate in department-wide outreach efforts, such as the Montgomery County Agricultural Fair and the Glenmont Block Party during summer 2019 (Figure III.E.25). Other outreach collaboration included participating in the energy program outreach, as well as promoting the *Tree Montgomery* program and providing materials at RainScapes events about the ongoing pet waste and litter campaigns. These collaborations all contribute to the effort to work across sections and reach broader audiences.

The pandemic resulted in the county staff shifting to teleworking, which ensured a safer work environment but meant that processes needed to be rapidly modified. Within the space of 2 weeks, RainScapes developed a virtual inspection protocol and shifted all files to remote working locations (Figure III.E.26); work continued with minimal disruption. Outreach training events, such as in-person

professional training, were postponed, but the spring course typically offered in person to residents was shifted to a virtual class; participants who returned their course surveys received native plants grown through *RainScapes for Schools*.



**Figure III.E.25. Glenmont Block Party Table Event**

New Protocol for COVID-19 Emergency Period 2020

RAINSCAPES REWARDS Rebate Program

Preliminary Inspection Process

Due to COVID19, the RainScapes Program is not conducting on-site inspections at this time. Instead, the program is offering to conduct virtual site visits. (Any project that cannot be inspected virtually will be noted and inspected after COVID19 restrictions have been lifted.)

**Requirements for**  
**Virtual Preliminary Inspections and Site Assessment**

- You'll need to be willing and able to use technology on your mobile device.
- The inspection will be conducted as a video conference and site walk-through with a RainScapes Planner to ensure that the type, size and scope of the project is appropriate for the property
- You will need to take some notes

When you arrange for the conference, you will be given a link to allow you to upload any images and videos you have to document your project both before the conference and after. We are able to schedule Microsoft Teams, Skype, Zoom or FaceTime formats. We prefer Microsoft Teams because it is easier to record the documentation.

Depending upon your proposed project size and complexity of site issues, please allow up to a full hour to complete the inspection. (Steps for the virtual site inspection/ site assessment are on Page 2)

**Virtual Preliminary**  
**Inspection/Site Visit Assessment Process**

A RainScapes planner will contact you to schedule your virtual Preliminary Inspection. The purpose of the preliminary inspection is to discuss your proposed project, assess the site, and determine program eligibility; it is not required for Rain Barrel projects.

**Post-Inspection/Site Assessment Video Conference**

Your planner will tell you in the video call if the project is eligible for a RainScapes rebate but details on eligible size and placement will come in a follow up email site report. The report, with findings and recommendations, will be emailed to you within 3 weeks. Use it to guide your decision-making or to provide to a contractor if you will be working with one.

- You will need to send a proposed plan, drawn to a measured scale of the project to the Planner.
- Plans must be approved before installation - see project requirements for your project
- You will be notified when your plans have been reviewed and approved. If changes are to be made to the submitted plan, the plan markup comments will be provided for you to revise and resubmit for approval prior to installation.
- Once you receive project approval to proceed, you install the project and contact your planner you are ready for a final inspection.

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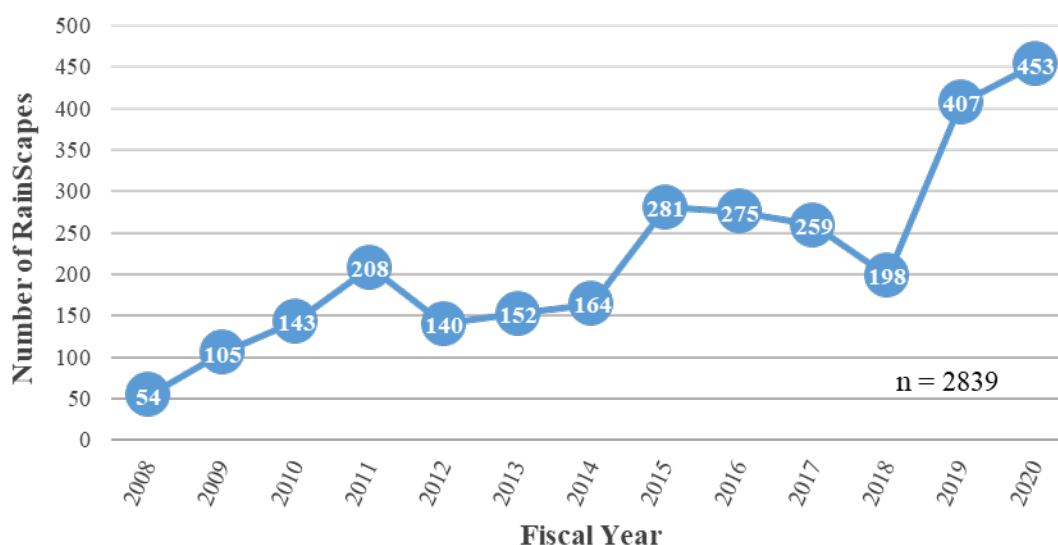
**Figure III.E.26. Process Change Outreach**

When public schools closed due to the pandemic, *RainScapes for Schools Growing* plants were shifted to a centralized location, with plants recovered from the participating schools in early March. The plants were used in several creative ways in outreach contexts. A series of RainScapes videos and Facebook Live events were created that highlighted how to use native plants for SWM and general landscaping for environmental benefit. A local business showcased the plants in planters outside of their business, and another video highlighting permeable pavement was created for a Facebook Live event. Additionally, the program ran watershed- and plant-based trivia challenges on Instagram and offered plants as prizes. In



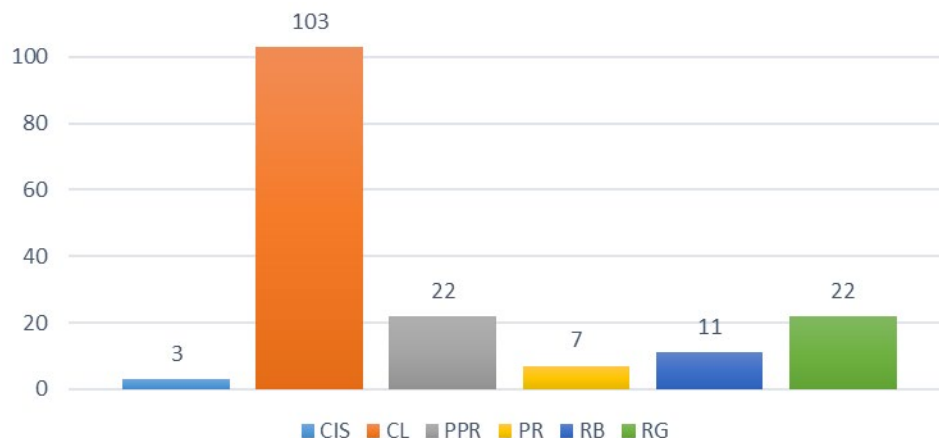
each case, DEP strived to educate and inform the public about the value of native plants. In all, 2,000 plants were distributed to the public.

Applications for RainScapes Rewards continued to grow in FY20. Rebate amounts were significantly increased in November 2018, and demand for projects jumped significantly. DEP continued to publicize the rebates and inform the public through the two e-gazettes for consumers (*RainScapes Gazette*) and professionals (*RainScapes Gazette for Landscape Professionals*). The gazettes remained an effective tool to reach a large number of residents. Figure III.E.27 shows the number of RainScapes Reward projects submitted since 2008. By the end of FY20, 2,839 projects had been submitted for all years, and FY20 application volume doubled that of FY18.



**Figure III.E.27. Applications for RainScapes Rewards by Fiscal Year**

In addition to the increase in overall numbers, over the past 4 years, the nature of projects being installed has changed. After rebates were increased in 2018, DEP has seen a shift in the size and type of project installed over the past year, with a spike in conservation landscaping installations (Figure III.E.28). Larger projects result in more expense overall, so the cost-share percent is reduced, but the environmental benefit is increased. DEP data show that, after a project is submitted, about 68 percent of projects are completed, but project completion typically takes longer than the initial expectation of 6 months. Based on the information that participants share, projects are installed primarily due to the need to solve drainage issues and a desire to do something good for the environment.



**Figure III.E.28. Distribution of Installed Projects during FY20 by Project Type**

RainScapes staff provided technical assistance to most grants awarded under the Montgomery County Chesapeake Bay Trust Grants. Site assessments conducted by RainScapes provided the technical guidance and outreach support to allow grant projects to move from discussion to reality. The range of projects spanned rain gardens, drywells, conservation landscapes, and water harvesting (Figure III.E.29). Staff input included reviewing designs, overseeing installations, and supporting workshop planning and delivery. Many of these projects were congregational that started as possible rebate projects but were developed as grant proposals after DEP enlarged the scale to be more suitable as a grant. In addition to meeting and teaching, RainScapes released two new documents—*Rain Gardens Planting Design Templates* (Figure III.E.30) and *Plant Spacing Guide for RainScapes* (Figure III.E.31).

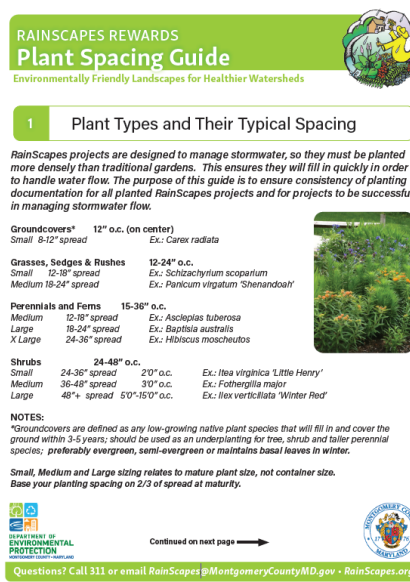


**Figure III.E.29. Successfully Completed Conservation Landscape Rewards Project**





**Figure III.E.30. Planting Design Templates for Rain Gardens**



**Figure III.E.31. RainScapes Plant Spacing Guide**

In total, separate from the Montgomery County Agricultural Fair, 34 events were organized for approximately 2,600 people, representing a slight increase over FY19 mostly due to the increased online events. Events educated both the public and professionals about SWM and specific actions at home, work, and places of worship participants can do to reduce runoff and improve the environment. Events ranged in attendance from 7 to 354 people per event. For the first time, other than sponsoring one event, paid advertising was not used to reach our audiences. RainScapes expertise on landscaping and site-specific solutions continue as a program strength that is sought by local and national audiences.

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## F. Watershed Assessment

### F. Watershed Assessment

1. The County shall conduct a systematic assessment of water quality within all of its watersheds. These watershed assessments shall include detailed water quality analyses, the identification of water quality improvement opportunities, and the development and implementation of plans to control stormwater discharges to the MEP. The overall goal is to ensure that each County watershed has been thoroughly evaluated and has an implementation plan to maximize water quality improvements. At a minimum, the County shall:
  - a. Within one year of permit issuance, provide a long-term schedule for the completion of detailed assessments of each watershed in Montgomery County. These assessments shall be performed at an appropriate scale (e.g., Maryland's hierarchical twelve-digit sub-basins). At a minimum, watershed assessments shall:
    - i. Determine current water quality conditions;
    - ii. Identify and rank water quality problems;
    - iii. Identify and prioritize all structural and nonstructural water quality improvement opportunities;
    - iv. Include the results of a visual watershed inspection;
    - v. Specify how restoration efforts will increase progress toward meeting any applicable WLAs included in EPA approved TMDLs. The County shall modify restoration efforts based on program implementation effectiveness, implementation plans developed according to PART III.J. below, and any TMDLs that are changed during this permit term;
    - vi. Specify how the restoration efforts will be monitored and how those data collected will be used to document progress toward meeting applicable WLAs;
    - vii. Provide an estimated cost, a detailed implementation schedule, and benchmarks for anticipated pollutant load reductions to show progress toward meeting applicable WLAs for those improvement opportunities identified above; and
    - viii. Include a public information component.
  - b. Perform watershed assessments based on the established long-term schedule until all land area in Montgomery County is covered by a specific action plan to address the water quality problems identified.
  - c. The County shall complete a detailed watershed assessment for the Great Seneca Creek and Muddy Branch watersheds within one year of permit issuance.
  - d. Report annually on the status of compliance with the watershed assessment schedule.

### F.1 Watershed Assessment Plan and Schedule

As required by the Permit, DEP continues to develop and update watershed assessments by evaluating current water quality conditions and then identifying and ranking structural, nonstructural, and programmatic watershed restoration opportunities for each watershed. Watershed assessments include field investigations, prioritized project inventories, and cost estimates. Watershed implementation plans (WIPs) include results from the watershed assessments and more detailed implementation planning and schedules to meet regulatory and programmatic targets.

The Permit required DEP to develop and submit a countywide implementation plan within 1-year of Permit issuance to identify how the County would achieve Permit requirements within the 5-year Permit term. A final version of the *Montgomery County Coordinated Implementation Strategy* (Strategy), and WIPs are accessible on DEP's website.<sup>1</sup>

Implementation plans were developed for those watersheds with existing U.S. Environmental Protection Agency (EPA)-approved total maximum daily loads (TMDLs) in 2009 and for watersheds where existing assessments and project inventories had been previously compiled (Muddy and Watts Branch). These plans identified best management practices, quantified treatment by those practices, determined watershed restoration potential, evaluated the watersheds' ability to meet applicable TMDLs, and provided schedules and cost estimates. More information on implementation plan development for EPA-approved TMDLs is provided in Part III.J, Total Maximum Daily Loads.

## F.2 Watershed Assessment Status

The status and schedule of watershed restoration planning is shown in Table III.F.1.

Table III.F.1. Status of Montgomery County Watershed Assessments		
8-Digit Watershed	Watershed Assessment Status	TMDLs (Issue Date)
Anacostia 02140205	Anacostia Watershed Restoration Plan (2010) Strategy WIP (2011) PCB <sup>1</sup> WIP (2012)	Bacteria (2006), sediment (2007), biological oxygen demand (2008), nitrogen (2008), phosphorous (2008), trash (2010), and PCB (2011)
Rock Creek 02140206	Strategy WIP (2011) Watershed assessment (2018)	Bacteria (2007), sediment (2011), and phosphorous (2012)
Cabin John Creek 02140207	Watershed assessment (2004) Strategy WIP (2011) Watershed assessment (2018)	Bacteria (2006) and sediment (2011)
Seneca Creek 02140208	Great Seneca and Muddy Branch Watersheds assessment (2007) Great Seneca Subwatershed, including Clopper Lake, strategy WIP (2011) Little and Dry Seneca Watersheds assessment (2014)	Clopper Lake: phosphorus and sediment (2002)
	WIP (FY14)	Sediment (2011)
Lower Monocacy 02140302	Watershed Assessment (2014) Updated WIP (FY14)	Sediment (2008), bacteria (2009), and phosphorus (2012)

<sup>1</sup> <https://www.montgomerycountymd.gov/water/stormwater/county-implementation-strategy.html>

Table III.F.1. Status of Montgomery County Watershed Assessments		
8-Digit Watershed	Watershed Assessment Status	TMDLs (Issue Date)
Potomac Direct 02140202	Great Seneca and Muddy Branch Watersheds assessments (2007 and 2014) WIP (FY14)	Sediment (2011)
Patuxent – Rocky Gorge and Triadelphia Reservoirs 02131107	Watershed assessment (2014) WIP (FY14)	Rocky Gorge – phosphorous (2008), Triadelphia – phosphorous (2008), Triadelphia – sediment (2008), and Patuxent – PCBs (2017)

<sup>1</sup> PCB = polychlorinated biphenyl

### F.3 Great Seneca and Muddy Branch Watersheds Study

During 2004, DEP initiated watershed inventories in the Great Seneca Creek and Muddy Branch Watersheds as cooperative efforts with the U.S. Army Corps of Engineers (USACE), the City of Gaithersburg, and Maryland National Capital Park and Planning Commission. These areas represent roughly one-third of the total County land area and include drainage from the densely developed areas of Gaithersburg and Germantown. The goal of the study was to identify opportunities for USACE to partner with local MS4 permit holders to help fund restoration projects. The study was scheduled to be completed by FY13, but has been delayed indefinitely due to limited federal funding. DEP completed independent assessments of the Great Seneca Creek and Muddy Branch Watersheds in 2007 and 2014. Projects identified in the assessment are included DEP's project planning.

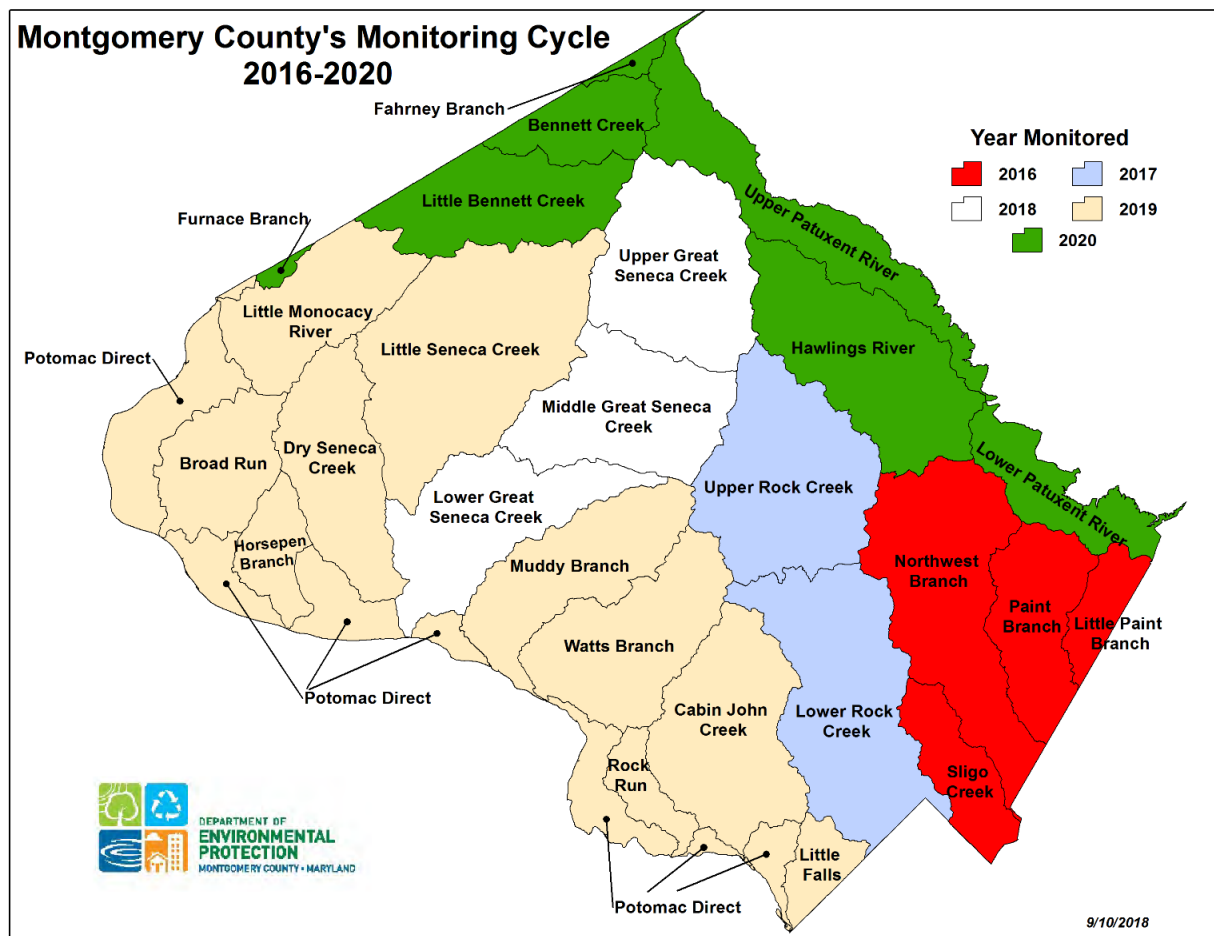
### F.4 Summary of Ongoing Watershed Assessment and Restoration Planning

The interjurisdictional *Anacostia River Watershed Restoration Plan and Report* (ARP) was completed in February 2010. DEP is developing a Continuing Authorities Program - Section 206 Feasibility Cost Sharing Agreement to conduct an ecosystem restoration feasibility study with the USACE, which will develop stream restoration design concepts for 7.4 miles of streams identified in the ARP. After the feasibility study is complete in FY22, DEP will submit its study recommendations for future USACE funding authorization of final design and construction. The constructed projects will contribute towards the County's impervious surface restoration goals and wasteload allocations.

### F.5 Watershed Screening

DEP monitors the biological community and stream habitat conditions at representative stations in all County watersheds on a rotating basis over a 5-year cycle, as displayed on Figure III.F.1. DEP then uses a multimetric index of biological integrity (IBI) to develop narrative ratings of biological conditions in waterbodies. A benthic IBI (BIBI) is calculated using benthic macroinvertebrates sampling results, while a fish IBI is calculated using fish sampling results. For this report, a combined IBI for benthics and fish is used for stations having a drainage area greater than 350 acres. The combined IBI score is then converted to a percentage with 100 percent the highest possible score. Biological conditions in the waterbody are then described as *excellent* (88 to 100 percent), *good* (64 to 87 percent), *fair* (42 to 63 percent) and *poor* (0 to 41 percent).





**Figure III.F.1. Montgomery County DEP Provisional Baseline Stream-Monitoring Cycle**

For stations with drainage areas fewer than 350 acres, unless otherwise noted, only the BIBI is converted to a percentage, with 100 being the highest possible score. Only BIBIs are used in these smaller drainage areas because these small streams typically only support pioneering fish species due to limited habitat. In addition, pioneering species adapt well to changing habitat and flow conditions, making them unreliable indicators for rating impairments. DEP's full round of baseline watershed conditions in the County from 2011 to 2015 is available as an online interactive map.<sup>2</sup> This map allows users to examine the health of more than 150 subwatersheds in the County by zooming in or searching by address. The information provided for this report is the calendar year (CY) 2019 stream monitoring season. The monitoring completed during CY20 will be provided in the FY21 MS4 Annual Report.

During the 2019 monitoring season, 91 locations were sampled for benthic macroinvertebrates across 11 subwatersheds of the Cabin John Creek (02140207), Seneca Creek (02140208) and Potomac Direct Watersheds (02140202). Seneca Creek Watershed includes Dry Seneca Creek Subwatershed and Little Seneca Creek. Potomac Direct Watershed includes Broad Run, Horsepen Branch, Little Falls, Muddy Branch, Rock Run, Watts Branch, Little Monocacy River, and eight smaller tributaries. The watersheds monitored in 2019 are predominately in the southern and western portions of the county. Of these 91 locations, 60 were surveyed for fish. Locations meeting the 350-acre minimum drainage area requirement

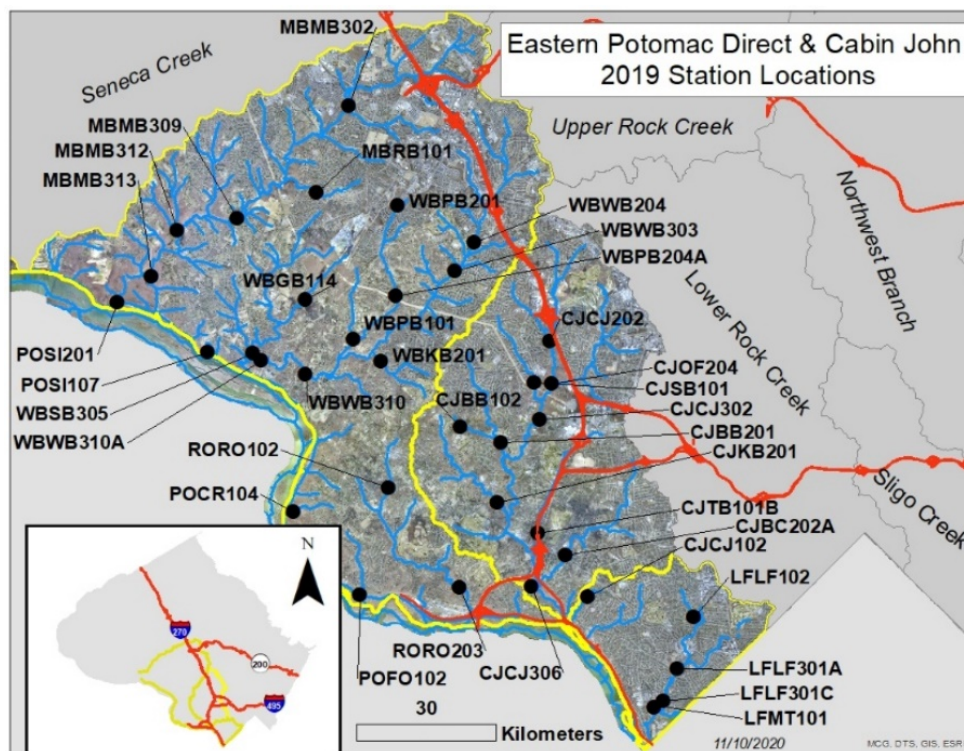
<sup>2</sup> <https://www.montgomerycountymd.gov/water/streams/>

but were not fished include CJCJ306 (staffing limitations), DSDS313 (presence of a beaver dam), HBHB212 (dry) and HBHB302 (dry). For these four stations, only the benthic IBI will be used to describe the biological condition. In this section, each 8-digit watershed is addressed separately.

## F.6 2019 Watershed Screening Results

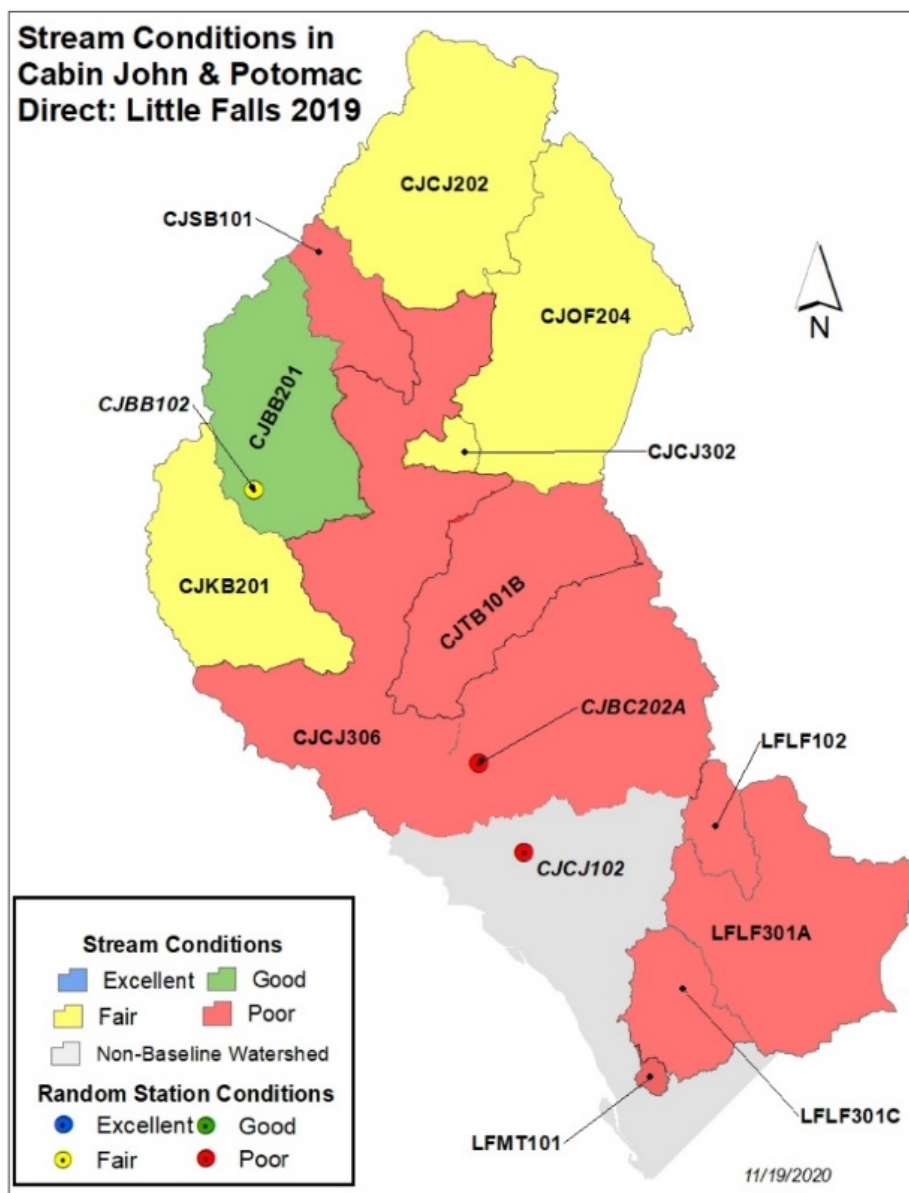
### F.6.a Cabin John Creek (02140207)

Cabin John Creek is a heavily impacted suburban watershed. The headwaters begin near the city of Rockville and flow south to the Potomac River. Interstate 495/270 bisects the watershed. Urban development is greatest in the eastern reaches and transitions to lower-density residential in the western portion. Eleven stations were sampled in the Cabin John Creek Watershed during the 2019 monitoring round. Of these sampled stations, three were sampled for only benthic macroinvertebrates; the drainage areas for CJBB102 and CJCJ102 are below the 350 acres required for a site to be fished, while CJCJ306 was not fished due to staffing limitations. Random stations sampled in the Cabin John Creek Watershed are CJBB102 and CJBC202A. Locations monitored in the Cabin John Creek Watershed in 2019 are shown on Figure III.F.2. Monitoring data considered include 1996, 2003, 2008, 2014, and 2019.



**Figure III.F.2. Monitoring Locations in the Cabin John Creek and Eastern Potomac Direct Watersheds**

Of the 11 stations monitored in 2019, 45 percent of the stations were rated *poor*, 45 percent were rated *fair*, 10 percent were rated *good*, and no stations were rated *excellent*. Over the five rounds of monitoring, conditions have predominately been *fair* with no occurrence of *excellent* (Figure III.F.3).



**Figure III.F.3. Stream Conditions in Cabin John Creek and Potomac Direct Watersheds Little Falls 2019**

One station, CJBB201 improved by one narrative category between sampling in 2014 and 2019. The combined biological condition increased from 51.5 percent (*fair*) to 63.5 percent (*good*). Overall, stream conditions are most heavily impacted by low benthic macroinvertebrate scores that were *poor* at all Cabin John Creek Watershed stations except CJKB201 (*fair*). However, fish scores have been predominately *good* over all monitoring rounds. Stream condition scores were *good* from 1996 to 2008 and *good/fair* for 2014 and 2019. However, monitoring indicates that all benthic macroinvertebrate communities sampled during 2019 may be impaired for reasons other than habitat, including chronic high flows, sedimentation, high temperatures, or other stressors. Fish communities sampled during 2019 generally scored higher than expected for the given habitat. Based on average yearly habitat scores, conditions for the Cabin John Creek Watershed have declined slightly for the years monitored. Scores were *good* from 1996 to 2008 and *good/fair* for 2014 and 2019.

Physical chemistry is sampled at the same time benthic and fish are surveyed. The maximum pH of 8.58, recorded at CJCJ306 during benthic sampling, is slightly above the upper limit of 8.50 for Class I waters. In addition, the average conductivity for sites monitored during 2019 benthic sampling season is substantially greater (649) than the overall average of 496. Elevated conductivity without substantial winter weather indicates high concentrations of dicers found in the groundwater or potentially other urban sources of conductivity. Appendix N includes more detail on Cabin John Watershed stream conditions, habitat scores, biological vs. habitat conditions, and physical chemistry.

## F.6.b Seneca Creek (02140208)

During the 2019 monitoring round, 44 stations were sampled for benthic macroinvertebrates in the Little and Dry Seneca Creek Subwatersheds of Seneca Creek. Of these 44 stations, 26 were sampled for benthic macroinvertebrates and fish. The Great Seneca Subwatershed of Seneca Creek was sampled during 2018 and discussed in the FY19 MS4 Report. Four stations (DSDS147, LSGE102, LSLS102B, and LSWL103A) were randomly chosen. DSDS313 was sampled for benthic macroinvertebrates but not for fish due to a beaver impoundment; this station is treated as a benthic-only site in this report. Monitoring locations are shown on Figure III.F.4. Monitoring data considered include 2001, 2014, and 2019 for the Dry Seneca Creek Subwatershed; data from 1998, 2001, 2006, 2014, and 2019 are considered for the Little Seneca Creek Subwatershed.

### (a) Dry Seneca Creek Subwatershed

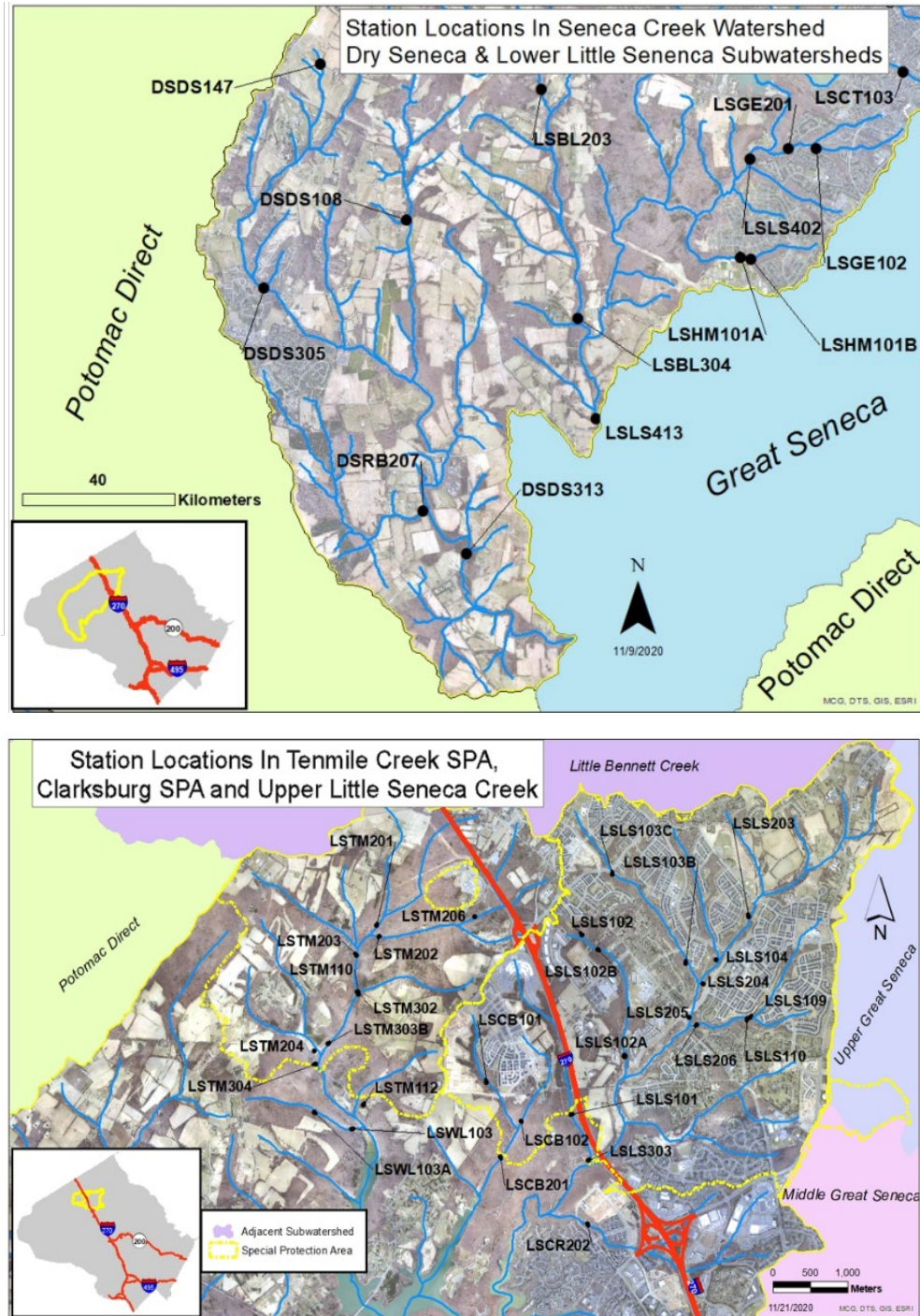
Dry Seneca Creek originates south of Barnesville and flows into Seneca Creek. Much of its watershed is agricultural but also includes low-density residential areas and portions of the town of Poolesville. Of the five stations monitored in 2019, 40 percent of the stations were rated *poor*, 20 percent were rated *fair*, 40 percent were rated *good*, and no stations were rated *excellent*. Over the last three monitoring cycles (2001, 2014, and 2015), conditions have predominately been *fair* to *good*, with no occurrence of *excellent* (Figure III.F.5). The only occurrences of *poor* have been at the 2019 randomly chosen and replacement station (DSDS108). No stations have changed categories between the 2014 and 2019 monitoring rounds.

Average habitat scores for the Dry Seneca Creek Watershed decreased from 139 (*good*) in 2001 to 109 (*good/fair*) in 2014. The average rapid habitat assessment (RHab) score for 2019 rebounded slightly to 119 (*good*). Fish communities sampled during 2019 are approximately as expected for the habitat present. The physical chemistry also taken at the same time as the benthic and fish surveys indicate that all parameters are within the water quality criteria for Class I waters. Appendix N provides more detail about the Dry Seneca Creek Subwatershed stream conditions, habitat scores, biological vs. habitat conditions, and physical chemistry.

### (b) Little Seneca Creek

Little Seneca Creek originates south of Damascus and flows into Seneca Creek. The Little Seneca Creek Watershed includes Clarksburg and Germantown, in addition to Ten Mile Creek and Clarksburg Special Protection Areas (SPAs). Station locations are shown on Figure III.F.4. Of the 39 stations monitored during 2019, 15 percent were rated *poor*, 21 percent were rated *fair*, 59 percent were rated *good*, and 5 percent were rated *excellent*.





**Figure III.F.4. Monitoring Stations in the Seneca Creek Watershed (2019)**

### Conditions in Seneca Creek 2019: Creek & Dry Seneca

**Random Station & Condition**

Station	Condition
LSBL203	Excellent
LSTM201	Good
LSTM203	Good
LSTM204	Good
LSTM304	Good
LSTM112	Good
LSCB101	Good
LSCB102	Good
LSCB201	Good
LSLS102B	Good
LSLS102	Good
LSLS103C	Good
LSLS104	Good
LSLS203	Good
LSLS204	Good
LSLS109	Good
LSLS110	Good
LSLS205	Good
LSLS206	Good
LSLS102A	Good
LSLS402	Good
LSGE201	Good
LSGE102	Good
LSHM101A	Good
LSHM101B	Good
DSDS147	Poor
DSDS305	Poor
DSDS108	Poor
DSDS313	Poor
DSRB207	Poor
LSLS413	Poor
LSBL304	Poor
LSCB101	Poor
LSCB102	Poor
LSCB201	Poor
LSLS103B	Poor
LSLS103C	Poor
LSLS104	Poor
LSLS203	Poor
LSLS204	Poor
LSLS109	Poor
LSLS110	Poor
LSLS205	Poor
LSLS206	Poor
LSLS102A	Poor
LSLS402	Poor
LSGE201	Poor
LSGE102	Poor
LSHM101A	Poor
LSHM101B	Poor

**Stream Condition**

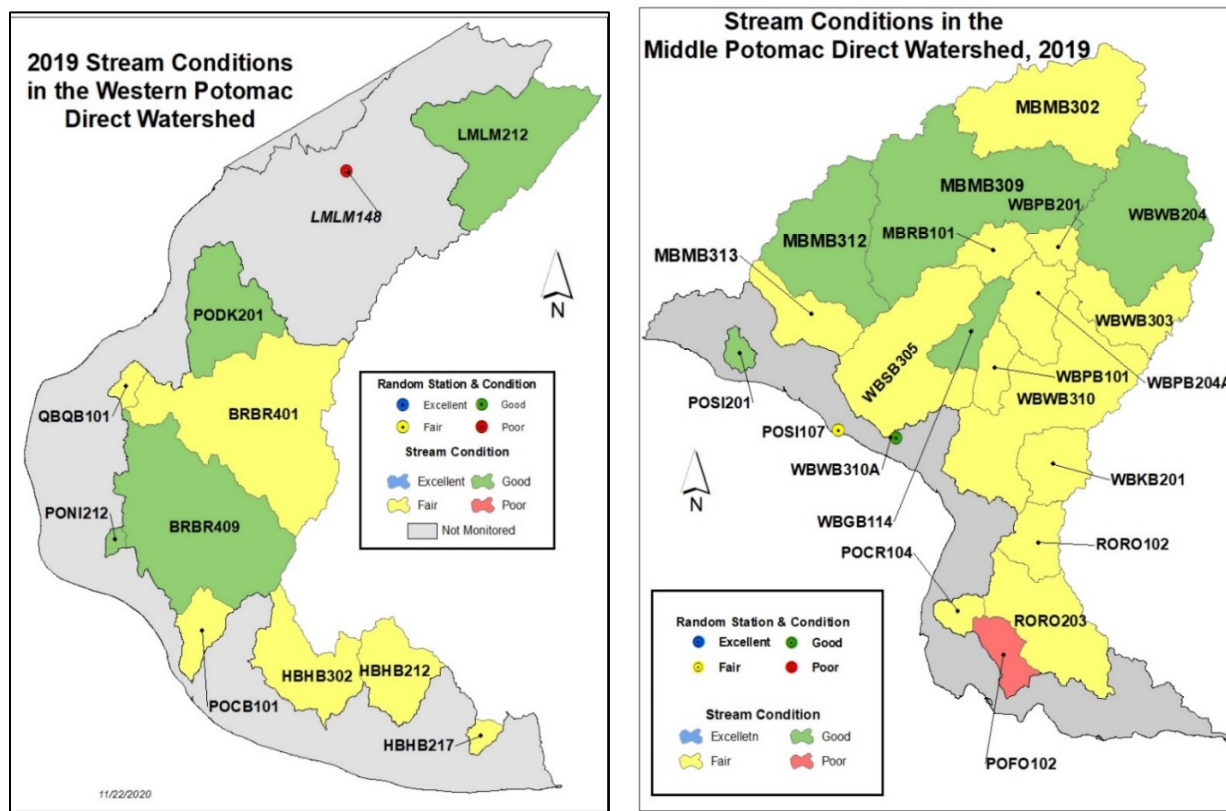
Stream	Condition
LSBL203	Excellent
LSTM201	Good
LSTM203	Good
LSTM204	Good
LSTM304	Good
LSTM112	Good
LSCB101	Good
LSCB102	Good
LSCB201	Good
LSLS102B	Good
LSLS102	Good
LSLS103C	Good
LSLS104	Good
LSLS203	Good
LSLS204	Good
LSLS109	Good
LSLS110	Good
LSLS205	Good
LSLS206	Good
LSLS102A	Good
LSLS402	Good
LSGE201	Good
LSGE102	Good
LSHM101A	Good
LSHM101B	Good
DSDS147	Poor
DSDS305	Poor
DSDS108	Poor
DSDS313	Poor
DSRB207	Poor
LSLS413	Poor
LSBL304	Poor
LSCB101	Poor
LSCB102	Poor
LSCB201	Poor
LSLS103B	Poor
LSLS103C	Poor
LSLS104	Poor
LSLS203	Poor
LSLS204	Poor
LSLS109	Poor
LSLS110	Poor
LSLS205	Poor
LSLS206	Poor
LSLS102A	Poor
LSLS402	Poor
LSGE201	Poor
LSGE102	Poor
LSHM101A	Poor
LSHM101B	Poor

Over the five rounds of monitoring, conditions have predominately been rated *good*. From the 2014 to 2019 monitoring rounds, seven stations had a decrease in ratings (LSCB201, LSLS103C, LSLS206, LSLS402, LSTM110, LSTM203, and LSTM204.) In contrast, four stations had an increase in rating between rounds (LSBL203, LSGE201, LSTM112, and LSWL103; Figure III.F.5).

Physical chemistry is sampled at the time of the benthic and fish survey. The maximum pH of 8.95 recorded at LSL303 during benthic sampling is above the upper limit of 8.50 for Class I waters. All pH readings during the summer, including at LSL303 were under 8.50. Appendix N provides more detail on Little Seneca Creek Watershed stream conditions, habitat scores, biological vs. habitat conditions, and physical chemistry.







**Figure III.F.7. Stream Conditions in the Potomac Direct Creek Watershed**

Based on the average yearly RHab scores, habitat conditions for the Potomac Direct Watersheds have declined over the years monitored. Scores that were predominately *good* (131) in 2002 declined to *good/fair* (109) in 2014. Scores increased slightly to *good* (114) in 2019. Benthic macroinvertebrate communities that may be impaired for reasons other than habitat include the urban Little Falls stations and most of the Watts and Muddy Branches stations. The Watts and Muddy Branches have higher density residential and commercial areas than the more westerly subwatersheds. The fish communities sampled at the Little Falls sites and POFO102 are not as expected for the given habitat. These sites are located in high-density residential locations, with older stormwater management and may have chronic high flow, higher temperatures, or other stressors. The remaining fish communities sampled during 2019 are rated approximately as expected for the habitat present.

Physical chemistry is sampled at the same time as the benthic and fish surveys. Two DO readings were below the 5 milligrams per liter criteria for Class I waters. Benthic sampling pH readings in the Potomac Direct Watershed have historically not met Class I criteria. Over the study period, 21 readings were either above 8.5 or below 6.5. In 2019, two stations had low pH readings, while nine sites had high readings. Appendix N includes more detail on Potomac Direct Watershed stream conditions, habitat scores, biological vs. habitat conditions, and physical chemistry.

## F.7 Conclusion

The stream conditions in the Cabin John, Seneca Creek, and Potomac Direct Watersheds have remained fairly consistent over the study period, even with habitat conditions in decline since 2006. Stream conditions generally improve toward the western part of the county where land use is more rural and apart

of the agricultural reserve. The more urbanized areas, with older stormwater management, generally have poorer conditions. Cabin John, with limited land use change, had only one station, CJBB201, change stream condition category. Conditions of the benthic communities, dominated by *Chironomidae*, in these three watersheds remain impaired, with overall conditions helped by substantially healthier fish communities. Most benthic communities are impaired for reasons other than habitat, including chronic high flows, sedimentation, high temperatures, and other stressors (Appendix N includes more detail). Chronic high and low pH may be additional stressors in the Potomac Direct Subwatersheds not seen in Cabin John and Seneca Creek.

## G. Watershed Restoration

### **G. Watershed Restoration**

The County shall implement those practices identified in PART III.F, to control stormwater discharges to the MEP. The overall goals are to maximize the water quality in a single watershed, or combination of watersheds; use efforts that are definable and the effects of which are measurable; and show progress toward meeting any applicable WLAs developed under EPA approved TMDLs. At a minimum, the County shall:

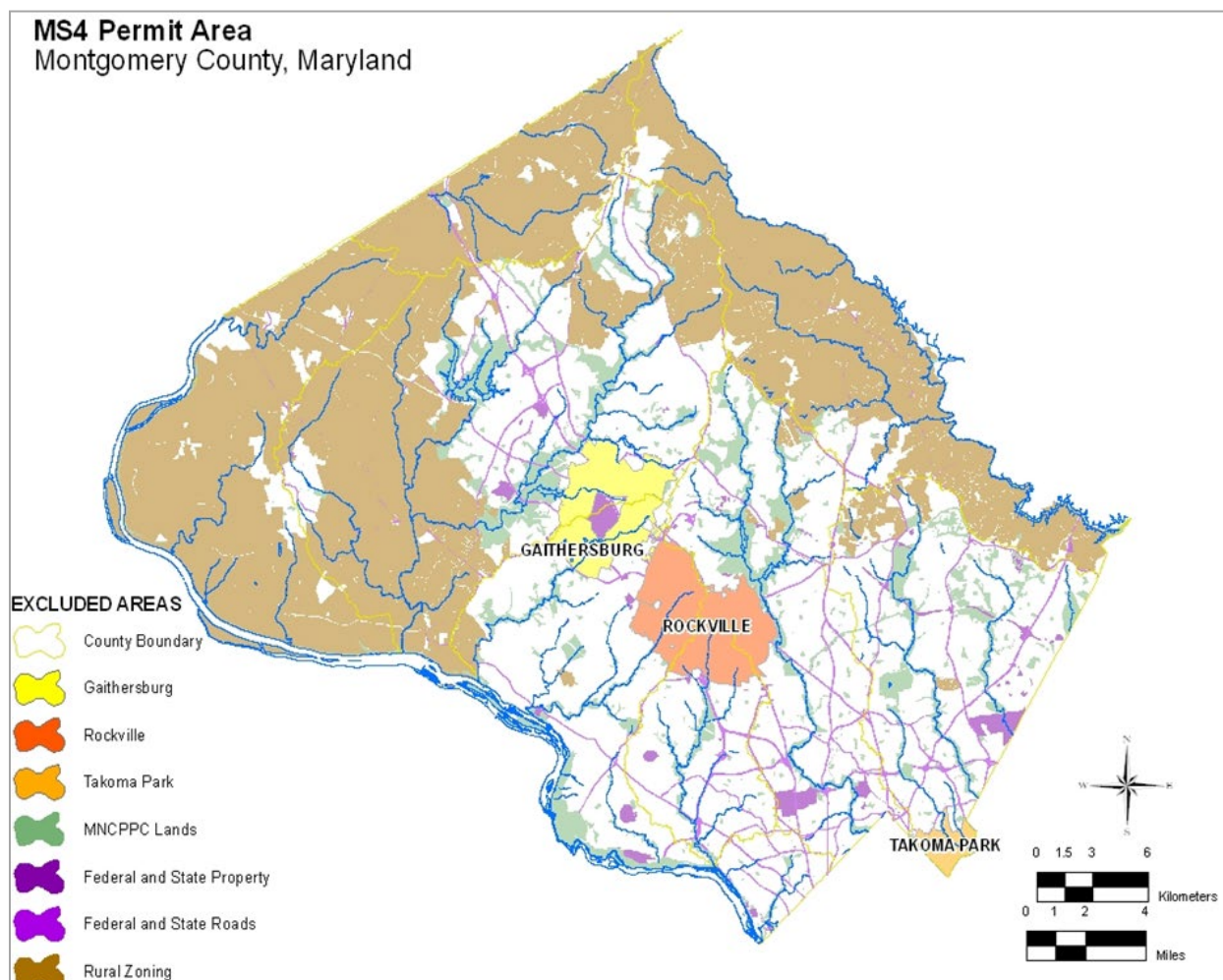
1. By the end of this permit term, complete the implementation of those restoration efforts that were identified and initiated during the previous permit term to restore ten percent of the County's impervious surface area. The watershed, or combination of watersheds where the restoration efforts are implemented shall be monitored according to PART III.H, to determine effectiveness toward improving water quality.
2. By the end of this permit term, complete the implementation of restoration in a watershed, or combination of watersheds, to restore an additional twenty percent of the County's impervious surface area that is not restored to the MEP. Restoration shall include but not be limited to the use of ESD and other nonstructural techniques, structural stormwater practice retrofitting, and stream channel restoration. These efforts shall be separate from those specified in PART III.G.1 and shall be monitored according to PART III.H, to determine effectiveness toward improving water quality.
3. Report annually:
  - a. The monitoring data and surrogate parameter analyses used to determine water quality improvements;
  - b. The estimated cost and the actual expenditures for program implementation; and
  - c. The progress toward meeting any applicable WLAs developed under EPA-approved TMDLs in the watersheds established in PART III.G.1 and 2, where restoration has occurred.

The following describes setting the 2010 MS4 Permit Watershed Restoration Goal:

The Permit requires the County to implement restoration practices identified through watershed assessments to control 20 percent of the County's impervious acres (IAs) not already controlled to the maximum extent practicable (MEP). The *Montgomery County Coordinated Implementation Strategy* (Strategy) provides the planning basis to meet the Permit's restoration requirement. DEP developed the Strategy using 2009 data, including IA and best management practice (BMP) drainage areas. DEP submitted the draft Strategy to MDE in February 2011, and it was approved on July 19, 2011, and then finalized in January 2012. DEP notes that the Strategy was developed before MDE's guidance for *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* was released in August 2014. Figure III.G.1 shows the County area in 2009, subject to the Permit.

The County MS4 area comprises 25,119 IAs, 6,230 acres of which were determined to be controlled to the MEP in 2009. The Permit requires the County to restore 20 percent of the remaining 18,889 uncontrolled and inadequately controlled IAs, which total 3,778 acres. Table III.G.1 summarizes how the County's restoration requirement was determined.





**Figure III.G.1 County Area Subject to MS4 Permit**

Table III.G.1 Area for the MS4 Permit Restoration Requirement		
	Description	Acres
A	County MS4 IA for the 2010-2015 MS4 Permit	25,119
B	County IA Controlled to the MEP in 2009 (2016 revision)	6,230
C	County MS4 IA Inadequate/Uncontrolled (2016 revision) (A-B)	18,889
	IA Restoration Requirement (2016 Revision) (20 percent of C)	3,778

In a letter dated October 11, 2016, MDE approved an increase to the County's permit restoration goal by 1 acre (from 3,777 to 3,778); this increase resulted from several nonstructural BMPs located on single-family lots that were not inspected and, therefore, cannot be credited toward the County's IA controlled to the MEP in 2009. MDE approved removing these BMPs from the County's inventory, which removed 40 acres of control and increased the overall permit restoration goal by 1 acre. The County developed, and is now implementing, a program involving inspecting these practices to allow for credit in the future.



## G.1 Completion of the Permit Impervious Area Restoration Goal

When the Permit was issued in 2010, it was the first of its kind in Maryland and included an aggressive requirement to restore 20 percent of the County’s uncontrolled impervious surface. Despite protracted litigation initiated by third parties that remanded the Permit to MDE, the County immediately began required restoration efforts. Ultimately, the Permit was found to be valid in March 2016. The County also continued to work towards the restoration goal even after the Permit expired February 2015. In April 2018, the County signed a Consent Decree (CD) with MDE committing to fulfill the restoration requirement by December 2020.

The County met the restoration goal on December 28, 2018 and submitted a Revised Final CD Report, including an updated version of Appendix I showing detailed project information, on October 1, 2019. MDE approved the revised report on November 25, 2019. The Office of the County Attorney then worked with the Assistant Attorney General to file a satisfaction of judgement with the court, and an order terminating the CD was signed on December 30, 2019, officially closing the enforcement action. Appendix I includes the Revised Final CD Report and the court order terminating the CD.

Table III.G.2 summarizes the restoration achievements that contributed to meeting the 2010 permit restoration goal. In this table, the restoration efforts are presented in four categories: Capital Improvement Program (CIP) Projects, Voluntary BMP Implementation, Alternative BMPs, and New BMPs Treating Existing IA. The IA credit for the alternative BMPs is based on MDE’s guidance *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated*; exceptions include credit for stream restoration, which is based on the MDE April 30, 2019 memorandum, and tree planting and reforestation, which are based on the Chesapeake Bay Program’s *Urban Tree Canopy BMP Expert Panel Recommendations*.

Appendix J includes background data for the alternative BMPs, database accounting for new BMPs treating existing IA, and detailed tables showing project-specific information for completed projects. The County has continued restoration work since completing the 2010 permit restoration goal in December 2018. Restoration work that is above and beyond the 2010 permit restoration goal and that was completed in FY19 is presented in Section G.2.

**Table III.G.2. County Projects and Alternative BMPs Implemented to Meet the 2010 Permit Restoration Goal**

Category	Number Implemented	IA Restored (acres)
<b>a. CIP projects</b>	<b>1,383</b>	<b>2,480.9</b>
<i>i.</i> Environmental site design (ESD)/low-impact development (LID) projects	379	95.4
DEP Green Streets	202	42.1
Department of Transportation (DOT) CIP Green Streets	126	31.4
DEP public property ESD	45	19.3
Department of General Services (DGS) CIP ESD project	1	1.0
Montgomery County Public Schools (MCPS) ESD project	1	0.7

<b>Table III.G.2. County Projects and Alternative BMPs Implemented to Meet the 2010 Permit Restoration Goal</b>		
<b>Category</b>	<b>Number Implemented</b>	<b>IA Restored (acres)</b>
Underground water quality treatment	4	0.9
ii. Stormwater pond retrofits	37	1,213.2
iii. Stream restoration	16	896.3
DEP stream restoration	9	487.9
U.S. Army Corps of Engineers (USACE) and DEP stream restorations projects	7	408.4
iv. DOT outfall stabilization	26	14.7
v. Agency partnerships restorations projects	265	261.3
Intercounty connector (ICC) projects <sup>2</sup>	265	261.3
Washington Sanitary Sewer Commission (WSSC) stream restorations projects	37	-
<b>b. Voluntary BMP Implementation</b>	<b>1,599</b>	<b>85.6</b>
i. Watershed management grants	59	7.1
ii. RainScapes	1,477	55.4
iii. Voluntary BMP earned water quality protection charge (WQPC) credits	63	23.0
<b>c. Alternative BMPs <sup>3</sup></b>	<b>11,813</b>	<b>279.0</b>
i. Impervious surface removal	48	0.4
ii. Urban tree canopy expansion	11,220	37.4
iii. Urban forest planting	12	51.4
iv. Septic pumping <sup>4</sup>	-	-
v. Septic denitrification	139	36.1
vi. Wastewater treatment plant (WWTP) connections	394	153.7
vii. Street sweeping <sup>4</sup>	-	-
viii. Catch basin cleaning and storm drain vacuuming <sup>4</sup>	-	-
<b>d. New BMPs Treating Existing Impervious Cover <sup>5</sup></b>	<b>4,662</b>	<b>933.4</b>
<b>Progress Total:</b>	<b>19,457</b>	<b>3,778.9</b>
<b>Percentage Progress Toward Restoration Goal:</b>		<b>100</b>

<sup>1</sup> This column shows IA restoration work completed through December 28, 2018 to meet the 2010 permit restoration goal.

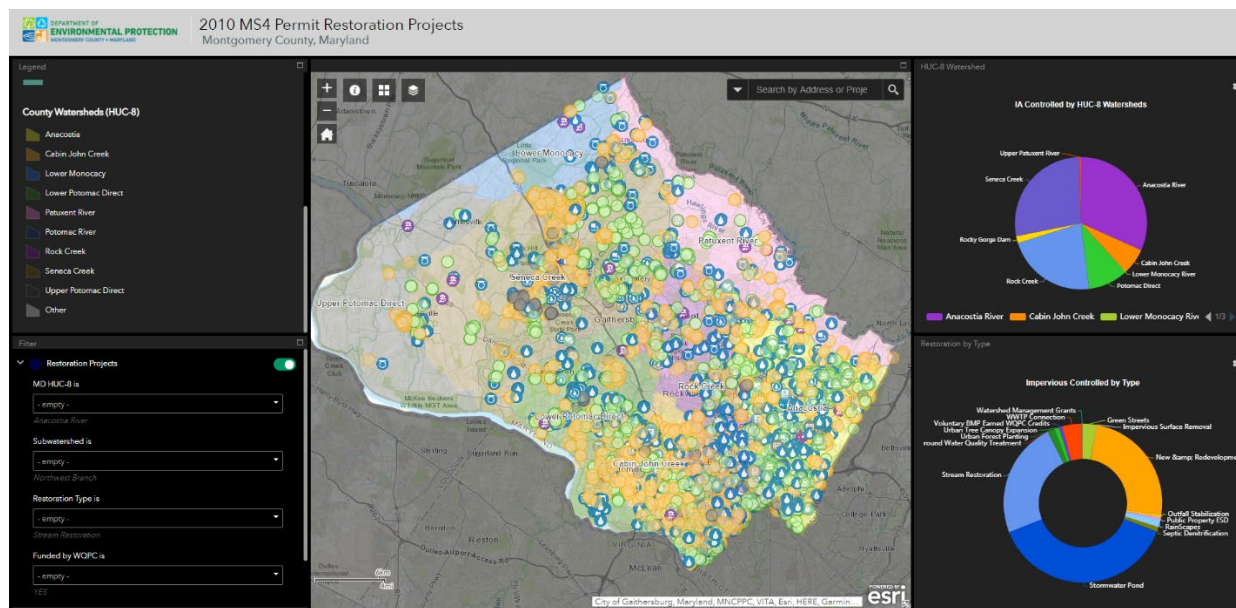
<sup>2</sup> ICC stewardship projects involved installing bioswales, pond retrofits, and new ponds and removing impervious surface.

<sup>3</sup> Includes a combination of permanent (for example, impervious surface removal, urban tree canopy expansion, urban forest planting, septic denitrification and WWTP connections) and annual (for example, septic pumping, street sweeping and catch basin cleaning) practices.

<sup>4</sup> IA restoration credit for annual practices was replaced with permanent credit from stream restoration projects in FY19.

<sup>5</sup> IA from new BMPs treating existing impervious cover (for example, redevelopment).

During FY20, the County developed an interactive map displaying the restoration work completed to meet the 2010 permit restoration requirement. The map allows users to explore restoration projects by location, watershed, and restoration project type and provides dynamic summaries of the restoration work of the user's interest. The map can be accessed through the Montgomery County Water Restoration webpage<sup>1</sup> and selecting the Watershed Restoration Projects map. Figure III.G.2. shows the interactive map's home page.



**Figure III.G.2. 2010 MS4 Permit Restoration Projects Interactive Mapping Tool**

On June 18, 2020, MDE provided comments to the County on the FY19 MS4 Annual Report. The comments identified areas where the County will need to consider moving forward with their stream restoration projects. The following is the County's response and efforts regarding the comments:

Comment 1: Recent inspection information was missing for 30 of 65 stream restoration projects included in the database. This information is required in future annual reports.

*MDE requested inspection information for 30 of 65 stream restoration projected included in the County geodatabase. The 30 stream restoration projects that were missing inspection information were for projects that were completed for the County's 2001 permit. The County will issue a task order to our NPDES support contractor by Spring 2021 for stream inspections. The task order will include development of a schedule for inspection of the 65 projects over the next five years, as well as inspection of six of the 30 projects. The six projects to be inspected in FY21 comprise one third of the total linear footage requiring updated inspection information. The County will issue subsequent task orders to ensure inspection of stream restoration projects per the schedule developed by the Contractor.*

Comment 2: MDE requests information regarding the County's procedures to address ongoing maintenance of stream restoration projects specifically after large storm events.

*MDE requested information regarding the County's procedures to address ongoing maintenance of stream restoration projects, specifically after large storm events. To date, DEP's policy has been to*

<sup>1</sup> <https://www.montgomerycountymd.gov/water/>

*prioritize repairs for projects identified as having maintenance needs while they are remaining under the five-year term of the Joint Permit Application. In FY20, DEP started a large repair of the Booze Creek stream restoration. As part of the stream inspection task order the County is in the process of issuing, the County will require maintenance recommendations to accompany the inspection reports. DEP will use these recommendations to prioritize repair projects and will request funding for the most critical repairs in FY23. DEP expects that many of the older projects will need to be Capital Improvement projects and are expected to require three to five years to complete design, permitting and construction. Regarding inspections after large storm events, DEP does not go out after every storm event. DEP relies on our residents to let us know when they see concerns with the streams, to act as our “resident inspectors.” DEP will conduct a field inspection based on these complaints and will perform minor maintenance, as needed.*

Comment 3: All future stream restoration projects need to follow the Chesapeake Bay Program’s Expert Panel on Stream Restoration protocols as the interim rate will be discontinued in accordance with MDE’s 2014 Accounting Guidance

*The County is aware that the proposed updated accounting guidance will require use of the Chesapeake Bay Expert Panel stream protocols and that the planning rate will only be allowed for planning purposes, not for final credit calculation.*

## G.2 Continued Restoration Work Completed in FY20 Beyond the 2010 Permit Restoration Goal

The County continued to implement restoration work in FY20. Table III.G.3 summarizes projects being carried forward to the next permit term, restoration work completed during FY19, and new restoration work completed, in design, or under construction during FY20. MDE is developing updated accounting guidance for use during the next permit term. As a result, project credit is subject to change, and only the numbers of projects completed by BMP type are presented in Table III.G.3. IAs restored by each project will be determined when the new accounting guidance is finalized.

**Table III.G.3. County Projects and Alternative BMPs Implemented in FY20 Following Completion of the 2010 Permit Restoration Requirement**

Category	Completed Projects Carried Forward Beyond Permit Goal	Completed Restoration in FY19 Beyond Permit Goal	Completed Restoration in FY20 Beyond Permit Goal	Total Completed Restoration Projects Beyond Goal	Continued Restoration in Design or Construction in FY20
<b>a. CIP Projects</b>	<b>22</b>	<b>16</b>	<b>15</b>	<b>53</b>	<b>14</b>
i. ESD/LID projects	14	2		16	1
DEP Green Streets	13			13	1
DOT CIP Green Street projects					
DEP public property ESD	1	2		3	
DGS CIP ESD project					
MCPS ESD project					
Underground water quality treatment					
ii. Stormwater pond retrofits	5	4	4	13	4
iii. Stream restoration		4	1	5	7
DEP stream restoration		4	1	5	7
USACE and DEP stream restoration projects					
iv. DOT outfall stabilization		5	10	15	2
v. Agency partnerships restoration projects	3	1		4	
<b>b. Voluntary BMP Implementation</b>		<b>116</b>	<b>301</b>	<b>417</b>	
i. Watershed management grants		4	22	26	
ii. RainScapes		112	279	391	
iii. Voluntary BMP earned WQPC credits					
<b>c. Alternative BMPs <sup>1</sup></b>		<b>2,481</b>	<b>2,810</b>	<b>5,289</b>	<b>7</b>



**Table III.G.3. County Projects and Alternative BMPs Implemented in FY20 Following Completion of the 2010 Permit Restoration Requirement**

Category	Completed Projects Carried Forward Beyond Permit Goal	Completed Restoration in FY19 Beyond Permit Goal	Completed Restoration in FY20 Beyond Permit Goal	Total Completed Restoration Projects Beyond Goal	Continued Restoration in Design or Construction in FY20
i. Impervious surface removal					
ii. Urban tree canopy expansion		2,479	2,808	5,287	
iii. Urban forest planting					5
iv. Septic pumping					
v. Septic denitrification					
vi. WWTP connections					
vii. Street sweeping		1	1	1	1
viii. Catch basin cleaning and storm drain vacuuming		1	1	1	1
<b>d. New BMPs Treating Existing Impervious Cover <sup>2</sup></b>		<b>498</b>	<b>335</b>	<b>833</b>	
<b>Progress Total:</b>	<b>22</b>	<b>3,111</b>	<b>3,461</b>	<b>6,592</b>	<b>21</b>

<sup>1</sup> Includes a combination of permanent (for example, impervious surface removal, urban tree canopy expansion, urban forest planting, septic denitrification, and WWTP connections) and annual (for example, septic pumping, street sweeping and catch basin cleaning) practices

<sup>2</sup> New BMPs include treating existing impervious cover (for example, redevelopment).

## H. Assessment of Controls

### H. Assessment of Controls

Assessment of controls is critical for determining the effectiveness of the NPDES stormwater management program and progress toward improving water quality. Therefore, the County shall use chemical, biological, and physical monitoring to document progress toward meeting the watershed restoration goals identified in PART III.G and any applicable WLAs developed under EPA approved TMDLs. Additionally, the County shall continue physical stream monitoring in the Clarksburg Special Protection Area to assess the implementation of the 2000 Maryland Stormwater Design Manual. Specific monitoring requirements are described below.

#### 1. Watershed Restoration Assessment

The County shall continue monitoring in the Lower Paint Branch watershed, or, select and submit for MDE's approval a new watershed restoration project for monitoring. Monitoring activities shall occur where the cumulative effects of watershed restoration activities can be assessed. One outfall and associated in-stream station, or other locations based on a study design approved by MDE, shall be monitored. The minimum criteria for chemical, biological, and physical monitoring are as follows:

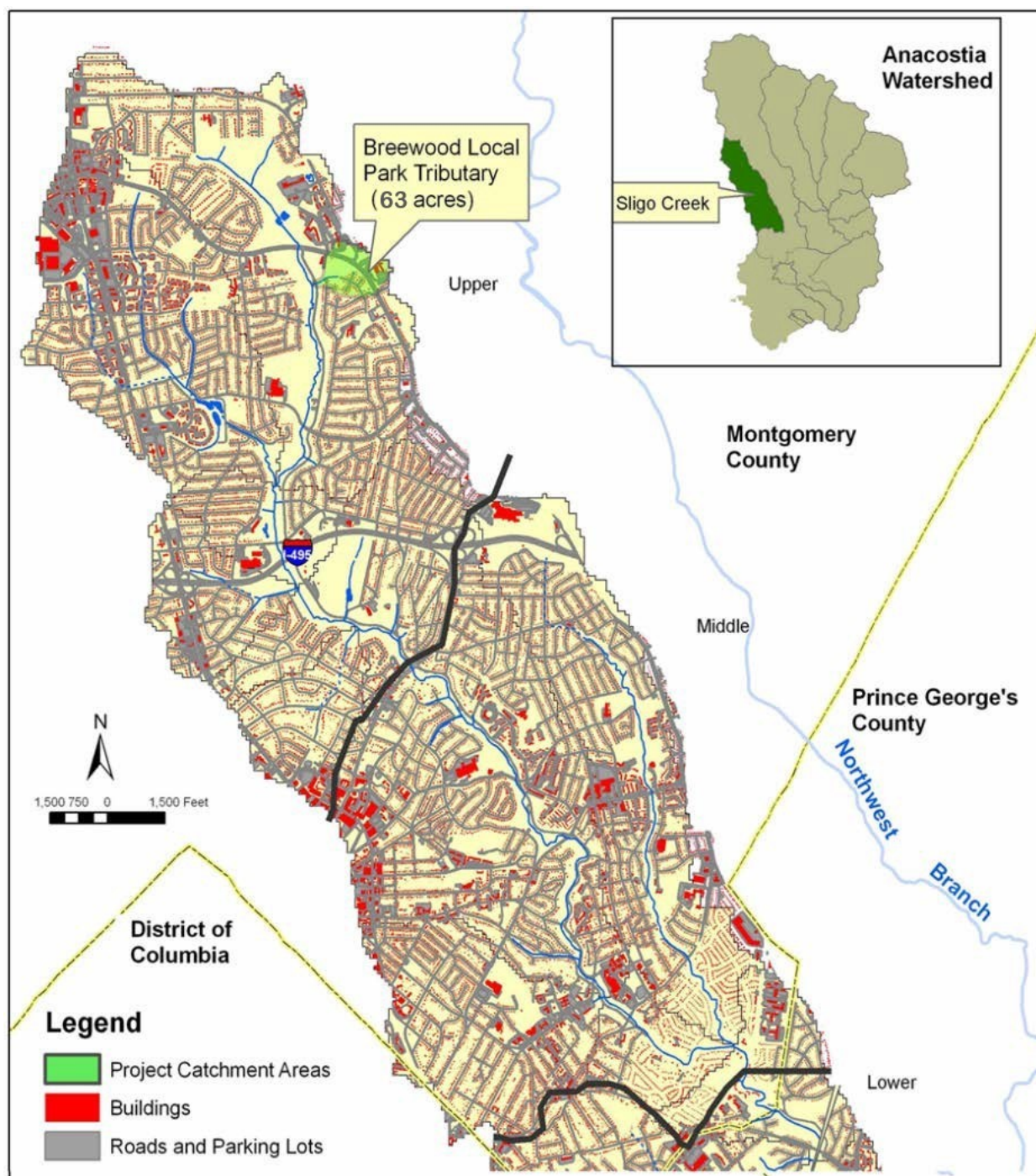
The Permit requires the County to assess the effectiveness of its stormwater management (SWM) program and control measures using pre-restoration and post-restoration watershed monitoring, which includes chemical, physical, and biological monitoring. The County must also document progress towards meeting the watershed restoration goals identified in Part III.G and any applicable wasteload allocations (WLAs) developed under the U.S. Environmental Protection Agency (EPA)-approved total maximum daily loads (TMDLs).

### H.1 Breewood Tributary Restoration Project

The DEP targeted the Breewood Tributary for comprehensive watershed restoration efforts. In 2009, MDE approved DEP's proposal to conduct pre- and post-restoration monitoring required in Part III.H.1 to assess effectiveness of the Breewood Tributary restoration efforts.

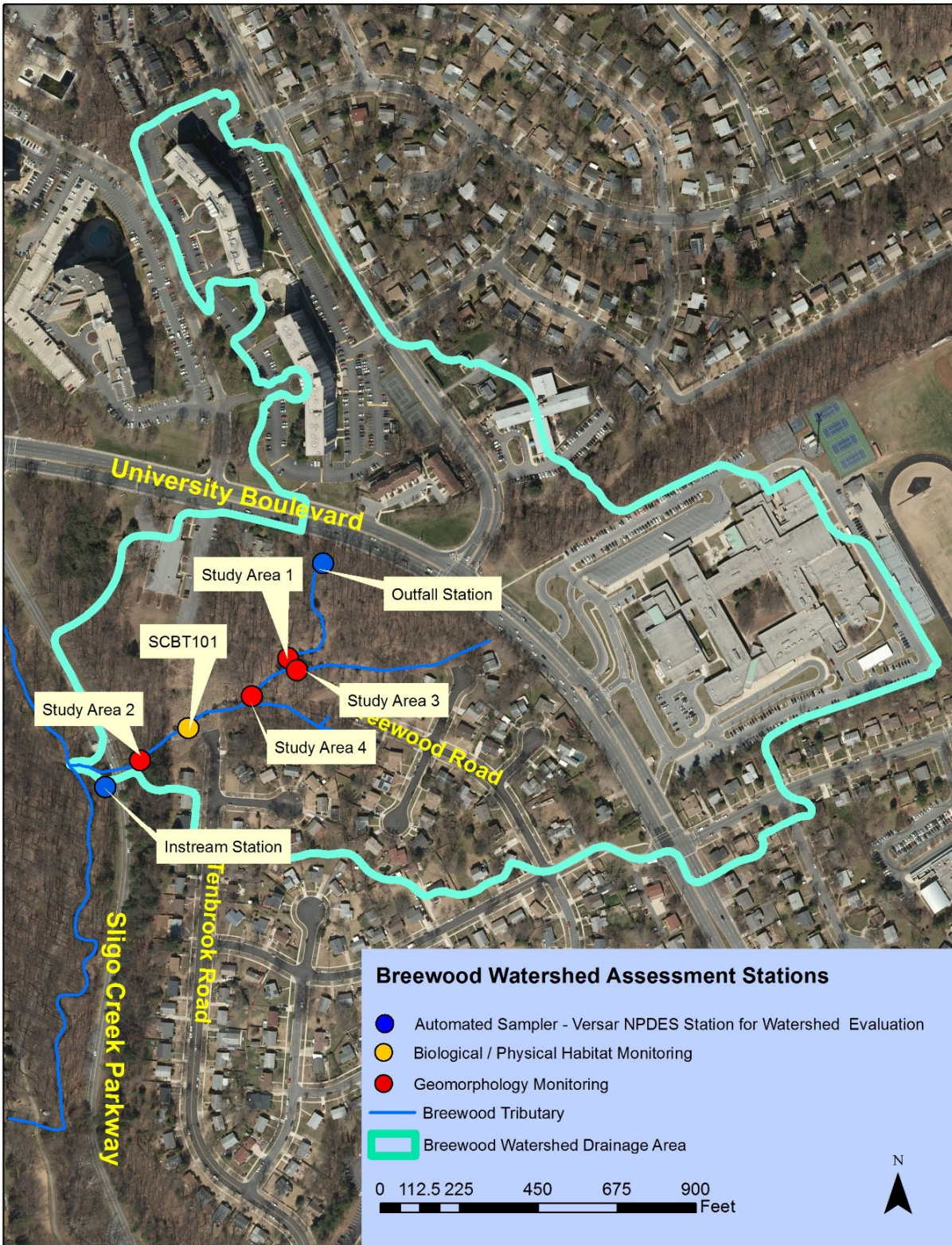
The tributary is located within the Sligo Creek Subwatershed of the Anacostia River Watershed (Figure III.H.1). Figure III.H.2 shows the locations of the Breewood Tributary drainage area and chemical, physical and biological monitoring stations. The Breewood Tributary is a 1,200-foot first-order stream in a small catchment (63 acres) containing 42 percent impervious acres (IAs).

The catchment is predominantly medium-density (0.25-acre) residential and contains a condominium complex, townhouse development, senior living center, high school, and church. Two primary roads are located in the upper portion of the catchment: University Boulevard and Arcola Avenue. Curb and gutter-designed streets support residential development located in the middle and lower sections of the catchment. In 2009, most stormwater runoff from the IAs was not controlled, thus leading to a severely unstable stream channel that would transport sediment and other associated pollutants downstream.



*Figure III.H.1. Location of the Breewood Tributary within the Sligo Creek Subwatershed of the Anacostia River Watershed*





**Figure III.H.2. Locations of Stream Chemistry, Biological, Physical Habitat, and Geomorphology Monitoring Stations**

During FY15, DEP completed construction of 10 right-of-way (ROW) environmental site design (ESD) green street practices along residential roads within Breewood Manor community and three RainScapes on individual residential properties.

Overall, these projects address runoff from 54 residential properties. Additionally, 1,200 linear feet of stream restoration were completed during FY15. In May 2017, DEP completed construction of a bioretention project at the end of Breewood Road. DEP also completed construction of 12 ESD practices to treat runoff from the University Towers and one ESD practice at the Northwood Presbyterian Church in July 2018. Following are potential benefits of these restoration projects:

- Stabilized banks to prevent erosion
- New trees and plants along stream banks
- Reduced sediment entering Sligo Creek
- Improved hydrology in the Breewood Tributary
- Improved water quality in both the Breewood Tributary and Sligo Creek
- Reconnected the stream to its floodplain
- Improved ecological health of the Breewood Tributary and adjacent floodplain areas
- Improved citizen awareness of stormwater impacts and methods to address them

In FY14, DEP launched a website dedicated to the entire project that provides project details, information, and status updates for the public.<sup>1</sup> Figure III.H.3 shows the locations of the restoration projects.

## H.2 Watershed Restoration Assessment

### H.2.a Breewood Tributary Chemical Monitoring

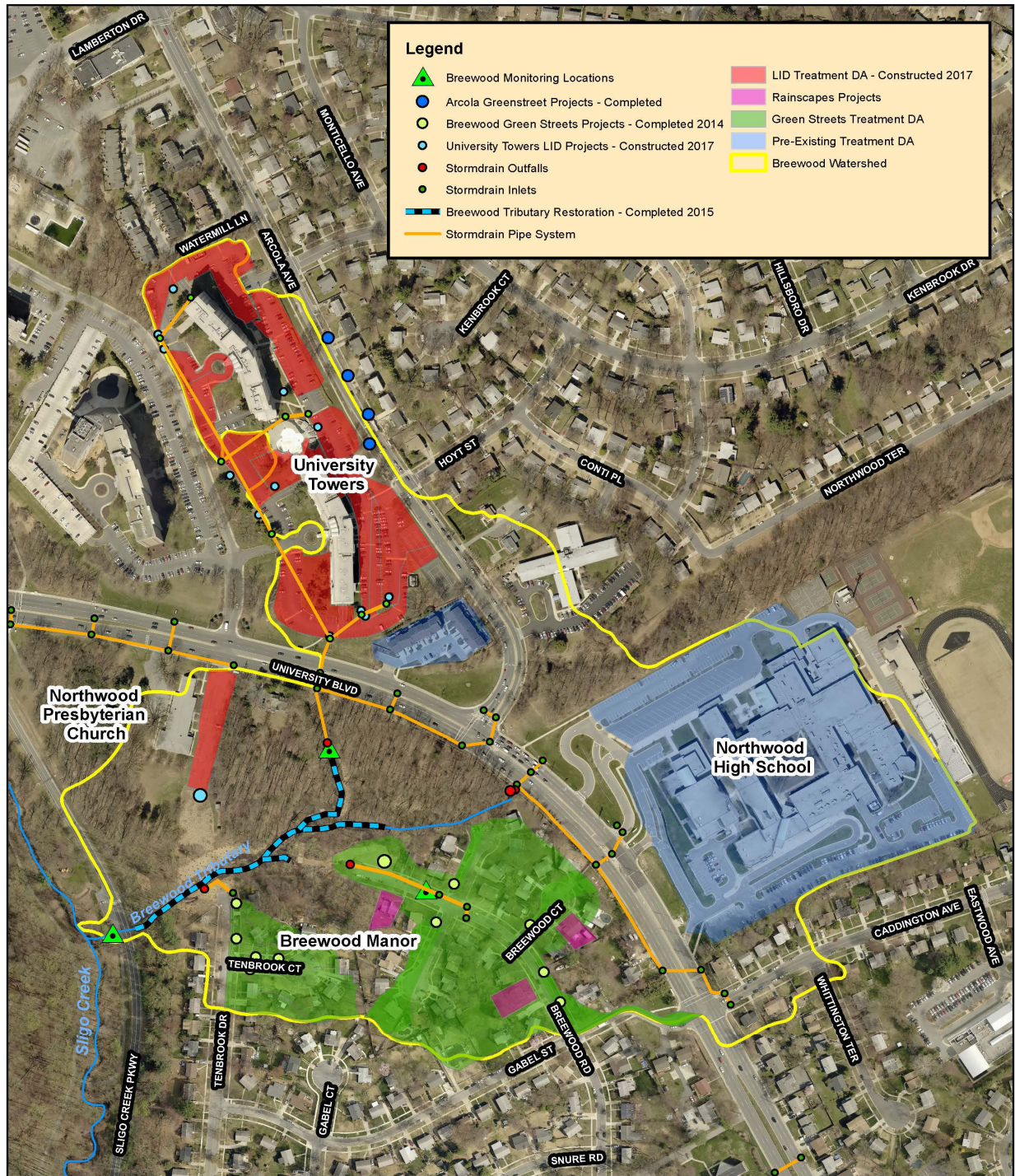
During 2019, DEP continued monitoring water chemistry in the Breewood Tributary at one storm drain outfall that drains University Boulevard and University Towers (the outfall station) and one instream station downstream of a culvert underneath Sligo Creek Parkway (the instream station); these are shown on Figure III.H.2. A continuously recording rain gauge is located at the Wheaton Branch stormwater ponds in Silver Spring, approximately 1 mile southwest of the monitoring stations. Twelve best management practices (BMPs) at University Towers and 1 at Northwood Church were completed during summer 2018, but a limited amount of data has been collected reflecting final conditions. This report contains very preliminary results about the final project's effectiveness. The FY21 annual report will provide a better picture of project impacts.

The Permit requires reporting chemical monitoring data, which are included electronically in Appendix A, Table F. The summary report *NPDES Water Chemistry Monitoring in the Breewood Tributary of Upper Sligo Creek 2009-2019* is also included in Appendix L. Information provided for this report is the calendar year (CY) 2019 monitoring season. The monitoring completed for CY20 will be provided in the FY21 Annual Report. Table III.H.1 shows the drainage area to each water chemistry station, and Table III.H.2 shows the contribution of impervious land uses to total IA in the drainage area during 2012.

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<sup>1</sup> The DEP website is located at <https://www.montgomerycountymd.gov/water/restoration/breewood.html>.





*Figure III.H.3. Locations of the Breewood Tributary Restoration Projects*

### i. Hydrology Modeling

The Permit requires evaluating rainfall-to-runoff characteristics of the contributing watershed using a standard, accepted hydrology model. The County produced a Hydrologic Engineering Center – River Analysis System model of the Breewood Tributary Watershed as part of the stream restoration design process. Model development was completed in FY14.

**Table III.H.1. Drainage Area to Breewood Water Chemistry Monitoring Stations**

<b>Location</b>	<b>Acres</b>
Total drainage area to the outfall water chemistry station	16.9
Total drainage area to the instream water chemistry station	62.9
Total drainage area	63

**Table III.H.2. Breewood Tributary Impervious Area, 2012**

<b>Impervious Type</b>	<b>Property Type</b>	<b>Acre(s)</b>	<b>Impervious Area (percent)</b>	<b>Watershed (percent)</b>
<b><i>Buildings (includes accessory structures)</i></b>		<b><i>8.12</i></b>	<b><i>31</i></b>	<b><i>13</i></b>
	Multifamily residence	1.02	4	2
	Nonresidential	0.53	2	1
	Single-family residence (SFR) attached	0.25	1	0
	SFR detached	1.96	7	3
	School	4.36	16	7
<b><i>Parking and Driveways</i></b>		<b><i>11.69</i></b>	<b><i>44</i></b>	<b><i>19</i></b>
	Multifamily residence	4.01	15	6
	Parks and planning	0.02	0	0
	Nonresidential	1.23	5	2
	ROW	0.24	1	0
	SFR Attached	0.09	0	0
	SFR detached	0.57	2	1
	School	5.54	2	9
<b><i>Road</i></b>		<b><i>6.09</i></b>	<b><i>23</i></b>	<b><i>10</i></b>
	Road	6.09	23	10
<b><i>Other IAs</i></b>		<b><i>0.72</i></b>	<b><i>3</i></b>	<b><i>1</i></b>
	Multifamily residence	0.54	2	1
	ROW	0.10	0	0
	SFR detached	0.08	0	0
<b><i>Grand total</i></b>		<b><i>26.63</i></b>	<b><i>100</i></b>	<b><i>42</i></b>

## ii. Summary of Water Chemistry Monitoring Results

DEP's contractor installed the monitoring stations monitored water chemistry (for example, metals, nutrients), water quality (for example, pH, specific conductivity, temperature, dissolved oxygen [DO]), continuous flow, and continuous rainfall according to methods described in the *Quality Assurance and Quality Control Document for Water Chemistry Monitoring at Breewood Road Tributary*.<sup>2</sup>

Field teams collected baseflow samples monthly and monitored automated storm runoff, targeting three events per quarter. A total of 97 storms and 15 baseflow events were monitored at the outfall station, and 98 storms and 121 baseflow events were monitored at the instream station from 2009 through 2019. For each storm event, samples were collected along the rising, peak, and falling limbs of the hydrograph. After laboratory analysis, storm event mean concentrations (EMCs) were calculated from the results of these three samples.

Montgomery County is committed to capturing the Permit-required 12 storm events per year. In 2017, the County revised the study rainfall criterion to any event greater than 0.3 inch to balance the need to meet Permit terms with the desire to obtain a representative, unbiased data set. During 2019, DEP field staff successfully monitored 12 storms out of 16 attempts to sample during the year; three of the false starts were due to insufficient rain, and one false start was due to missing the rising limb because the rainfall arrived after the start of the automated sampler program. DEP staff experienced challenges sampling during a period of drought running from mid-August through mid-October, during which few storms occurred. Section 2.3.2 of the summary report, *NPDES Water Chemistry Monitoring in the Breewood Tributary of Upper Sligo Creek 2009-2019* (provided in Appendix L) contains additional information about the attempts to meet the sampling requirement.

Section 2.3.2 of the summary report also contains information on detection limits for hardness and missing values for total petroleum hydrocarbons (TPH) and *Enterococcus*. The Washington Sanitary Sewer Commission laboratory informed DEP that a method detection limit cannot be provided for hardness standard method (SM) 2340. To address this issue, the laboratory switched to SM 2340B in March 2018. Hardness samples collected after the change have a method detection limit of 0.2 milligrams per liter (mg/L) and a practical quantitation limit of 0.5 mg/L. Samples collected before March 2018 were analyzed with SM 2340 and have no detection limits. Samples for TPHs and *Enterococcus* were not collected for storms on January 19, February 11, March 20, November 23, and December 1, 2019 due to storm timing. The study protocol prohibits collecting samples during late night hours for safety reasons.

Flow and water chemistry data analysis will evaluate the effectiveness of watershed restoration efforts at improving hydrology and water chemistry. Data collected to date document baseline, during construction, and first year of post-restoration conditions. Stream restoration was constructed between October 2014 and May 2015. Maryland National Capital Park and Planning Commission retrofitted the culvert and the channel immediately upstream and downstream of the Sligo Creek Parkway road crossing at the instream station by installing step pools during early September 2015. During 2016, a large bioretention structure was under construction at the end of Breewood Road, however, construction was suspended due to high groundwater levels that required reevaluating the design and some modifications. The bioretention was completed in May 2017. Structures at the Northwood Church and University Towers projects were installed during July 2018. Table III.H.3 outlines each project component's completion date. The first full year of data on the completed project was collected in 2019, and preliminary results are presented in this report. Additional data will be collected during FY21.

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<sup>2</sup> Versar, Inc. 2010. *Quality Assurance and Quality Control Document for Water Chemistry Monitoring at the Breewood Tributary*. Prepared by Teresa Hage and Thomas Jones, Jr., Versar, Inc., Columbia, Maryland. Prepared for Montgomery County Department of Environmental Protection, Rockville, Maryland. October 27.



**Table III.H.3. Breewood Watershed Restoration Progress**

<b>Project Component</b>	<b>Start Date</b>	<b>Completion Date</b>
Arcola Green Streets	August 2011	October 2011
Breewood Manor Green Streets	October 2014	May 2015
RainScapes projects	May 2014	November 2014
Breewood Tributary restoration	October 2014	May 2015
Breewood Road bioretention	December 2015	May 2017
University Towers SWM	November 2017	July 2018
Northwood Presbyterian Church project	November 2017	July 2018

### iii. Monitoring Results

Drainage area size and land use to both outfall and instream stations' affected flow rate, total stormflow volume, and response of flow from rainfall. As expected for rain events, a stream stage rise at the instream station occurred later than a stage rise at the outfall station. Stormflow appears at the outfall faster because its drainage area contains higher percentages of IA and connectivity. Flow rate and total stormflow volumes were generally greater at the instream station as expected, given its greater drainage area. The instream station also is somewhat less responsive to small events because of the relatively lower amount of IA and greater travel time through the system. For each station, baseflow mean concentrations (MCs) were calculated for all Permit-required parameters over the 11-year monitoring period.

Storm EMCs represent the weighted average pollutant concentrations based on samples collected at discrete intervals during a storm. EMCs were calculated and averaged over the 11-year monitoring period for each parameter except TPHs and *Enterococcus*. Stormflow samples for these parameters were collected during only the first flush, so MCs, rather than EMCs, were calculated. The average EMCs and MCs (Table III.H.4) of each parameter at each station were compared as follows:

- Storm samples generally had higher pollutant concentrations at the outfall than at the instream station.
  - Mean storm EMCs for 5-day biochemical oxygen demand (BOD<sub>5</sub>), total Kjeldahl nitrogen (TKN), copper, zinc, and storm MCs for TPH and *Enterococcus* were all higher at the outfall than at the instream station.
- At the instream station, the relationship between flow type and results was not consistent.
  - Mean storm EMCs were higher than baseflow MCs for BOD<sub>5</sub>, TKN, total phosphorus (TP), total suspended solids (TSS), and metals.
  - First-flush storm MCs were higher than baseflow MCs for *Enterococcus*.
  - Mean storm EMCs were lower than baseflow MCs for nitrate plus nitrite, and hardness.
- At the outfall station, the relationship between flow type and results was not consistent.
  - Mean storm EMCs were higher than baseflow MCs for TSS, cadmium, and lead.
  - First-flush storm MCs were higher than baseflow MCs for both TPH and *Enterococcus*.

- Mean storm EMCs were lower than baseflow MCs for BOD<sub>5</sub>, TKN, TP, nitrate + nitrite, copper, zinc, and hardness.
- The higher pollutant concentrations for most parameters in baseflow may be due to stored pollutants mobilizing in the soil layer of the contributing catchment.

**Table III.H.4. Mean Storm EMCs and Baseflow MCs ( $\pm 1$ -sigma standard deviation) in Breewood Tributary, 2009 through 2019**

Analyte	Mean Storm EMC		Baseflow MC	
	Outfall	Instream	Outfall	Instream
<b>Number of Samples Taken</b>	<b>97</b>	<b>98</b>	<b>15</b>	<b>121</b>
BOD <sub>5</sub> , mg/L	5.2 $\pm$ 4.2	3.9 $\pm$ 3.6	10.9 $\pm$ 8.5	0.3 $\pm$ 1.2
TKN, mg/L	0.892 $\pm$ 0.584	0.737 $\pm$ 0.5	2.659 $\pm$ 2.474	0.123 $\pm$ 0.376
TP, mg/L	0.031 $\pm$ 0.062	0.043 $\pm$ 0.103	0.205 $\pm$ 0.211	0.000 $\pm$ 0.000 <sup>b</sup>
Nitrate + nitrite, mg/L	0.323 $\pm$ 0.206	0.509 $\pm$ 0.296	0.938 $\pm$ 1.153	2.107 $\pm$ 0.796
TSS, mg/L	49.6 $\pm$ 53.8	88.8 $\pm$ 111.2	17.7 $\pm$ 14.7	3.9 $\pm$ 5.5
Total cadmium, mg/L	0.00000 $\pm$ 0.00002 <sup>c</sup>	0.00000 $\pm$ 0.00002 <sup>c</sup>	0.00000 $\pm$ 0.00000 <sup>b</sup>	0.00000 $\pm$ 0.00000 <sup>b</sup>
Total copper, mg/L	0.025 $\pm$ 0.017	0.017 $\pm$ 0.011	0.084 $\pm$ 0.106	0.005 $\pm$ 0.01
Total lead, mg/L	0.005 $\pm$ 0.007	0.008 $\pm$ 0.017	0.002 $\pm$ 0.003	0.0002 $\pm$ 0.0015
Total zinc, mg/L	0.082 $\pm$ 0.061	0.045 $\pm$ 0.032	0.204 $\pm$ 0.283	0.019 $\pm$ 0.012
TPH, <sup>c</sup> mg/L	3 $\pm$ 5	1 $\pm$ 2	1 $\pm$ 2	1 $\pm$ 3
<i>Enterococcus</i> , <sup>c</sup> MPN/100 mL	11,892 $\pm$ 37,567	2,493 $\pm$ 7,983	365 $\pm$ 673	171 $\pm$ 367
Hardness, mg/L	44 $\pm$ 24	61 $\pm$ 36	118 $\pm$ 84	147 $\pm$ 48
Number copper exceedances, <sup>d</sup> mg/L	85	53	11	10
Number lead exceedances, <sup>d</sup> mg/L	0 <sup>a</sup>	1	0 <sup>a</sup>	0 <sup>a</sup>
Number zinc exceedances, <sup>d</sup> mg/L	24	5	8	0 <sup>a</sup>

<sup>a</sup> Analytical results are below detection limits and, therefore, means set to zero.

<sup>b</sup> Additional digits are added to storm EMC and baseflow MC results to illustrate difference in results.

<sup>c</sup> EMCs are not calculated for TPH or *Enterococcus*. These values are arithmetic averages of first-flush grab results. A total of 54 storm samples were collected at each station for TPH; 51 and 50, respectively, storm samples were collected for *Enterococcus* at the instream and outfall stations.

<sup>d</sup> Storm EMCs and baseflow individual concentrations for metals (total form) are compared with Maryland's acute numerical criteria for protecting aquatic life in surface waters, which are dissolved or biologically available equivalence form: copper = 0.013 mg/L, lead = 0.065 mg/L, and zinc = 0.120 mg/L.

mg/L = milligram(s) per liter

MPN/100 mL = most probable number per 100 milliliters



Preliminary analyses of flow rate and water chemistry data—comparing pre-restoration to post-restoration results at the outfall and instream stations—indicate varying effectiveness in improving water chemistry. The restoration project’s overall effectiveness was significant for select pollutants as follows:

- EMCs for TSS and copper were lower for small and large storms after restoration. EMCs for lead were lower for storms greater than 0.75 inch.
- EMCs for hardness were higher after restoration for small and large storms.
- Pollutant loadings decreased for TP, TSS, copper, and lead but increased for TKN, BOD, zinc, hardness, and nitrate + nitrite.

Additional analysis is underway, and more definitive results will be available in FY21.

#### **iv. Annual Pollutant Loadings**

Annual pollutant loadings for each station during 2019 were computed from separate baseflow annual loadings and stormflow annual loadings as follows:

- The total annual baseflow discharge was obtained by separating baseflow values from the flow rate data record.
- The total annual stormflow discharge was determined by subtracting total annual baseflow discharge from the total annual discharge (determined by plotting the annual hydrograph in Flowlink®).
- The stormflow annual load for each parameter at each station was determined by multiplying the average annual storm EMC by the total annual stormflow discharge.
- The baseflow annual load was determined by multiplying the annual baseflow MC by the total annual baseflow discharge.

Loading values were calculated from baseflow MCs, stormflow MCs, and stormflow EMCs. These are presented in Table III.H.5 as well as Appendix A, Table G.2.

**Table III.H.5. Baseflow, Stormflow, and Total Annual Loadings (pounds) in Breewood Tributary, 2019**

Analyte	Stormflow Loading		Baseflow Loading		Total Loading (stormflow + baseflow)	
	Outfall	Instream	Outfall	Instream	Outfall	Instream
BOD <sub>5</sub>	1,374	1,974	480	0	1,854	1,974
TKN	148	250	113	0	262	250
TP <sup>a</sup>	5	4	38	0	43	4
Nitrate + nitrite	67	277	86	1,547	153	1,824
TSS	5,307	8,173	1,199	1,428	6,506	9,602
Total cadmium <sup>a</sup>	0	0	0	0	0	0
Total copper	3	3	3	1	6	4
Total lead <sup>a</sup>	0	0	0	0	1	0
Total zinc	13	12	11	18	25	31
TPH <sup>a</sup>	158	0	0	0	158	0
<i>Enterococcus</i>	329,433	158,528	9,167	43,234	338,600	201,762
Hardness	8,246	26,150	14,010	121,724	22,256	147,874

<sup>a</sup> Zero load indicates all concentration data below detection limits.

## v. Continuous Water Quality Monitoring

During June 2014, DEP began continually monitoring DO, specific conductivity, temperature, and turbidity at the both instream and outfall stations. Through this additional monitoring, DEP hopes to collect more -effective information on the watershed's water quality impairments. Information on DO levels could be especially helpful in determining the causes of poor biological communities.

Beginning in November 2014, some low DO readings were observed, however, instrumentation problems associated with DO sensor fouling were also identified. The equipment manufacturer believes that bacteria and algae growing on the sensors may have obstructed water flow and produced readings of DO levels within the biological organisms growing on the sensor rather than the DO level of the water column. The results reflect the ambient DO level, but interpretation is difficult. The equipment was fitted with wipers in 2016 that regularly clean the sensors to improve accuracy. Wipers were not available for these units prior to 2016.

In 2016, continuous DO data were collected simultaneously by sensors with and without wipers to evaluate the reliability of the baseline data collected without wipers. The data have been found to be generally reliable, although the two instruments showed some differential performance, especially at higher DO readings. The data will permit evaluation of the impact of the project on stream water quality once all the structures have been completed.

## H.2.b Breewood Tributary Biological Monitoring

### i. Overview

As shown on Figure III.H.2, the biological monitoring station is located in the Breewood Tributary upstream of the Sligo Creek Parkway and instream water chemistry monitoring station. Before channel restoration, DEP scientists monitored benthic macroinvertebrates (aquatic insects) at SCBT101 from 2010 to 2014. Fish are not monitored in the Breewood Tributary due its extremely small drainage area and lack of adequate flow and habitat conditions for healthy fish populations. The Breewood Tributary was restored in 2015; during that time, benthic macroinvertebrates were not sampled due to active site construction. Post-restoration biological sampling began in 2016.

DEP uses a benthic index of biological integrity (BIBI) to assess stream conditions at SCBT101. Pre-restoration (2010 through 2014) benthic community results data were collected and compared with post-restoration (2016 and later) data to evaluate watershed restoration success. BIBI comprises eight metrics of benthic macroinvertebrate community composition and function. DEP examines several of these more-detailed metrics, including percentage of functional feeding groups (FFGs) present, taxa richness, taxa composition, and pollution tolerance. Each measurement responds in a predictable way to increasing levels of stressors. Adjustments in metrics may be observed as the biological community shifts, and these smaller-scale changes might be seen before the overall BIBI score changes.

FFG classifications organize benthic macroinvertebrates by their feeding strategies.<sup>3, 4</sup> Following are the five FFGs usually examined in a bioassessment:

- **Collector gatherers** are the most generalized in feeding and habitat needs and are usually the most-abundant FFG because their food source of fine particulate organic matter is abundant.
- **Filtering collectors** filter small particulate organic matter that float in the current.
- **Shredders** reduce coarse material (like leaves) into fine material that can then be transported downstream for use by collectors. Shredders also are considered specialized feeders and sensitive organisms and typically well-represented in healthy streams.
- **Scrapers** scrape and graze on diatoms and other algae. Many taxa in this group are sensitive to environmental degradation and associated with high-quality streams.
- **Predators** attack and consume other insects and macroinvertebrates.

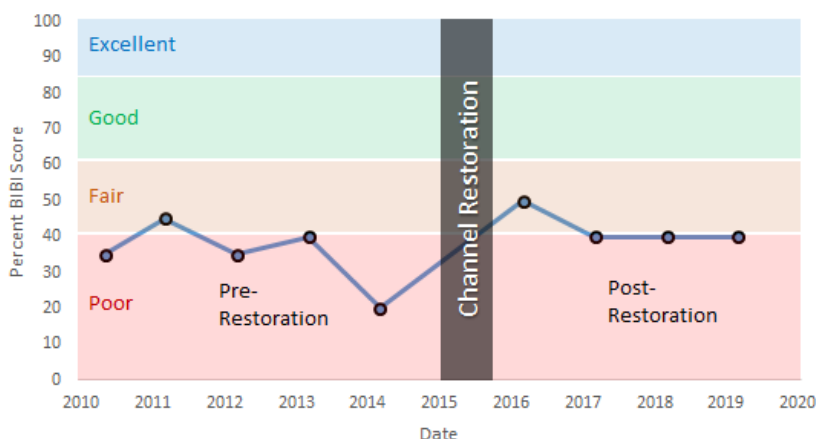
### ii. Benthic Macroinvertebrate Results

During pre-restoration, the Breewood Tributary stream condition ranged from *poor* (20 percent) to *fair* (45 percent) (Figure III.H.4). The single occurrence of *fair* occurred 2011; the number of taxa in the Breewood Tributary samples was low to moderate (ranging from 5 taxa in the 2010 sample to 14 taxa in years 2011 and 2013 samples). Shredders only accounted for 5 percent of the FFGs present, and no scrapers were found. Collectors accounted for 66 percent of the individuals in the pre-restoration samples, and the dominant taxa were members of the *Chironomidae* (midge) family, which tend to tolerate

<sup>3</sup> Camann, M. 2003. "Functional Feeding Groups. Zoogeography." *The River Continuum*. Humboldt University, California.

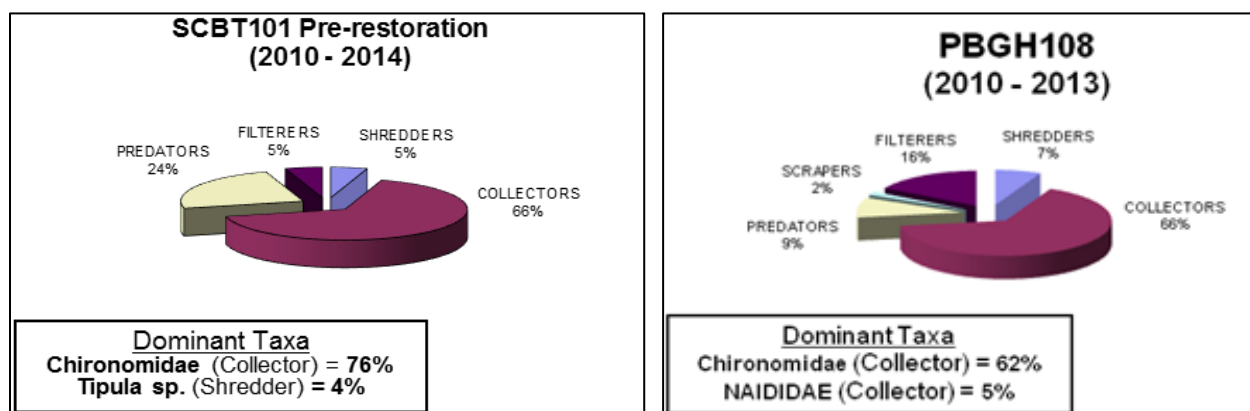
<sup>4</sup> Cummins, K.W. 1994. "Bioassessment and Analysis of Functional Organization of Running Water Ecosystems." Chapter 9. In: *Biological Monitoring of Aquatic Systems*. S.L. Loeb and A. Spacie, editors. Lewis Publishers.

pollution and other environmental stressors.<sup>5, 6</sup> *Chironomidae* decreased from 91 percent in 2010 to 55 percent in 2014, and no obvious cause for this shift was apparent.



**Figure III.H.4. Breewood Tributary (SCBT101) Percent BIBI Scores**

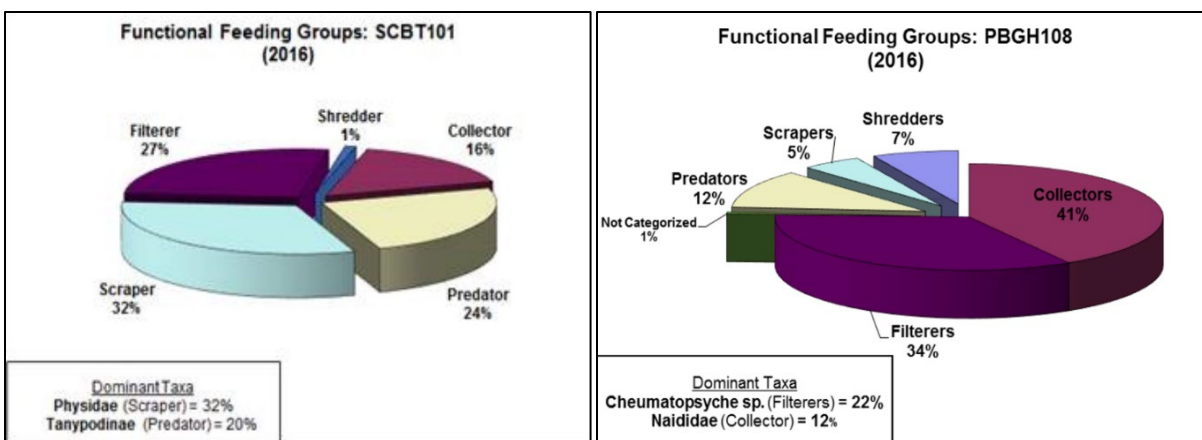
Figure III.H.5 shows the average proportion of each FFG at SCBT101 for pre-restoration years 2010 through 2014, compared with a reference stream reach, the Good Hope Tributary to Paint Branch (PBGH108). This site was selected as a reference site because it is similar in size and in good condition, providing an accurate comparison before and after Breewood restoration. During the first year of post-restoration (2016), the stream condition increased to *fair* (50 percent); 13 taxa were present, indicating moderate species richness. Shredders accounted for 1 percent (one *Tipula* species) of the total sample. Scrapers were found for the first time and accounted for 32 percent of the sample, however, all were members of the family *Physidae*, tolerant snails. Collector gatherers, filterers, and predators accounted for 16 percent, 27 percent, and 24 percent, respectively, of the sample (Figure III.H.6a). *Chironomidae* accounted for 26 percent of the 2016 sample.



**Figure III.H.5. Pre-Restoration FFG Comparison in the Breewood (SCBT101) and Good Hope Tributaries (PBGH108)**

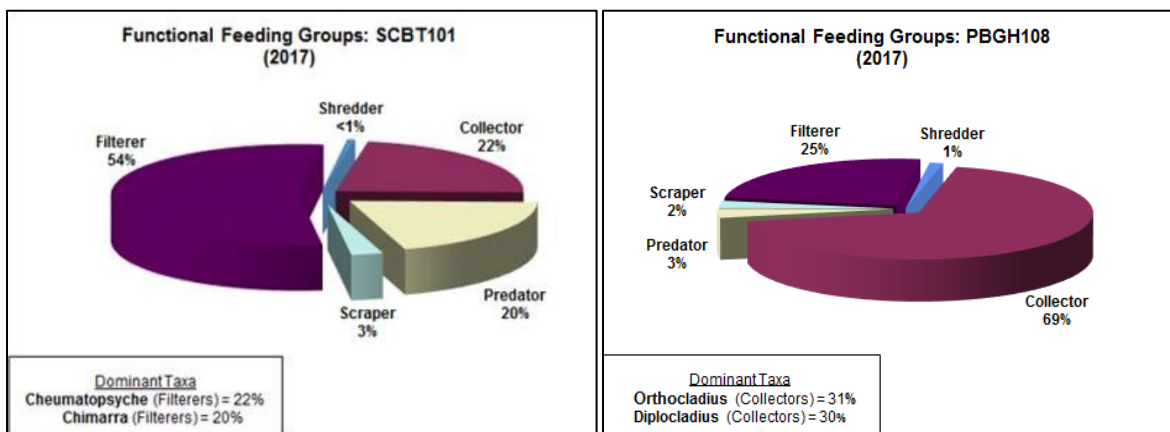
<sup>5</sup> Pedersen, E.R. and M.A. Perkins. 1986. "The use of benthic invertebrate data for evaluating impacts of urban runoff." *Hydrobiologia* 139: 13-22.

<sup>6</sup> Jones, R.C. and C.C. Clark. 1987. "Impact of watershed urbanization on stream insect communities." Paper No. 86137. *Water Resources Bulletin* 23: 1047-1055.



**Figure III.H.6a. Post-Restoration FFG Comparison in the Breewood (SCBT101) and Good Hope (PBGH108) Tributaries, 2016**

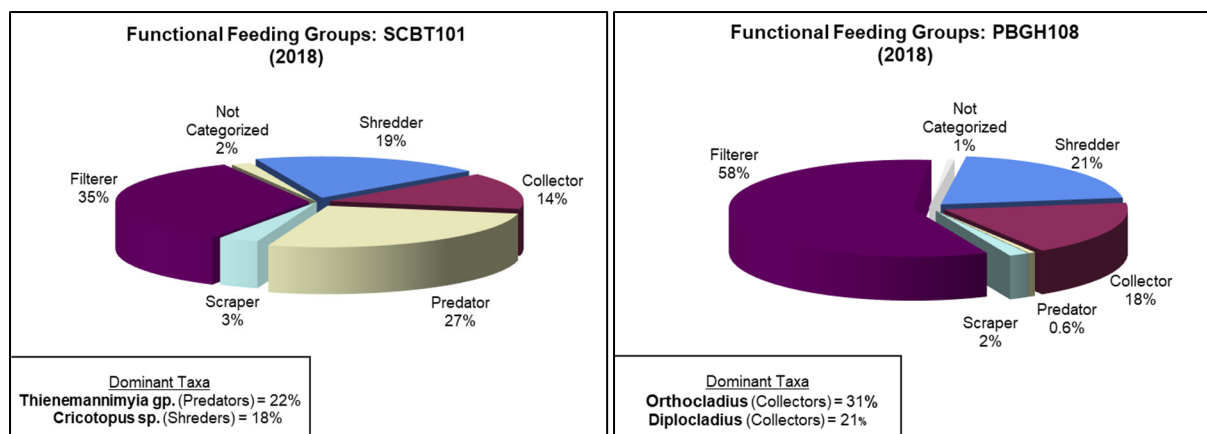
During the second year of post-restoration (2017), the stream condition declined to *poor* (40 percent); 10 taxa were present, indicating moderate species richness. Shredders accounted for 1 percent (one *Tipula* species) and scrapers accounted for only 3 percent of the sample. As in 2016, all were members of the family *Physidae*, tolerant snails. Collector gatherers, filterers, and predators accounted for 22 percent, 54 percent, and 20 percent, respectively, of the sample (Figure III.H.6b). *Chironomidae* accounted for 45 percent of the 2017 sample.



**Figure III.H.6b. Post-Restoration FFG Comparison in the Breewood (SCBT101) and Good Hope (PBGH108) Tributaries, 2017**

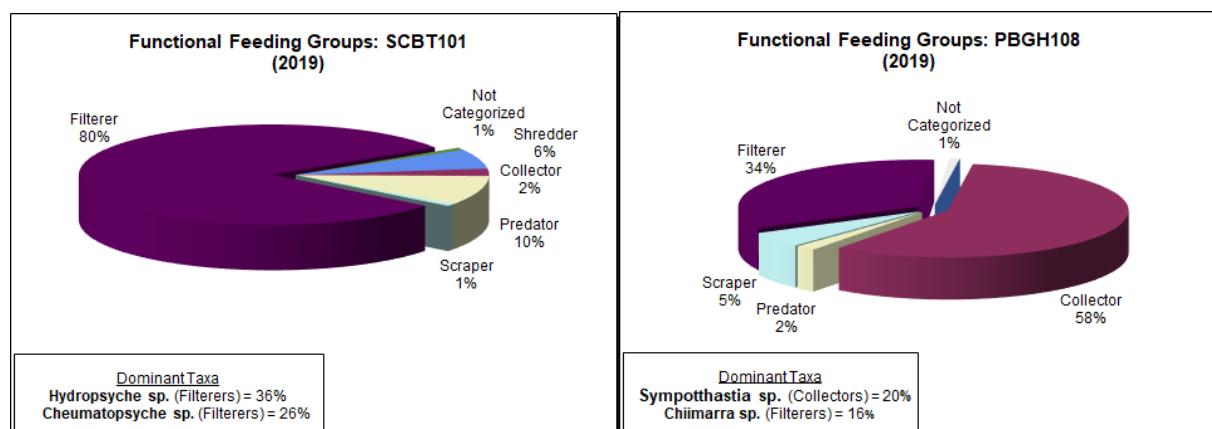
During the third year of post-restoration (2018), stream condition remained *poor* (40 percent); 13 taxa were present, indicating moderate species richness. Shredders accounted for 19 percent (two species: *Tipula* and *Cricotopus* sp.) and scrapers accounted for still only 3 percent of the sample (but comprised three species: family *Physidae* or tolerant snails; *Oulimnius* sp., a tolerant beetle; and *Stagnicola* sp., a tolerant snail), whereas, only one taxa was represented in 2017. Collector gatherers, filterers, and predators accounted for 14 percent, 35 percent, and 27 percent, respectively, of the sample (Figure III.H.6c). *Chironomidae* accounted for 50 percent of the 2018 sample.





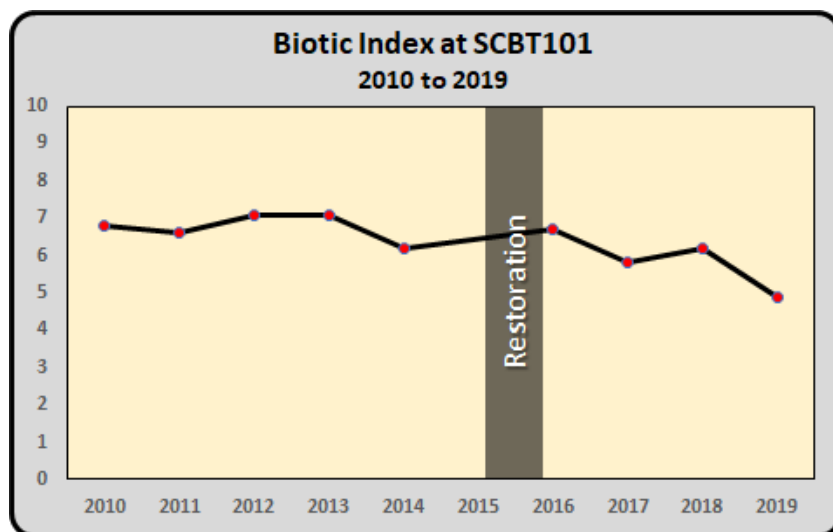
**Figure III.H.6c. Post-Restoration FFG Comparison in the Breewood (SCBT101) and Good Hope (PBGH108) Tributaries, 2018**

During the fourth year of post-restoration (2019), the stream condition remained *poor* (40 percent); 9 taxa were present, which equates the lowest number observed since restoration. Also, differences observed in the FFG composition relative to prior years were considerable, the most striking difference of which was the increase in filterers observed. In 2019, this group accounted for 80 percent of the sample. Previously, this group accounted for only between 25 to 50 percent of the sample. The number of predators declined to 9 percent of the sample, whereas previously they accounted for 20 to 27 percent of the sample. Shredders remained relatively stable, accounting for 6 percent of the total sample. Scrapers accounted for less than 1 percent of the sample and consisted of a single species (*Stenelmis* sp.). Collector gatherers accounted for just 2 percent of the sample and also consisted of a single species (*Orthocladius* sp.; Figure III.H.6d). The number of *Chironomidae* observed in 2019 significantly declined, accounting for only 16 percent of the sample, whereas in 2018, this group accounted for 50 percent of the sample.



**Figure III.H.6d Post-Restoration FFG Comparison in the Breewood (SCBT101) and Good Hope (PBGH108) Tributaries, 2019**

DEP used additional metrics to characterize the benthic macroinvertebrate community of the Breewood Tributary. The biotic index, which measures tolerance to organic pollution, has steadily declined (shown improvement) since restoration (Figure III.H.7). In 2019, the index was 4.8 (out of 10), indicating a moderately low tolerance to organic pollution.



**Figure III.H.7 Breewood Tributary (SCBT101) Biotic Index Scores, 2010 through 2018**

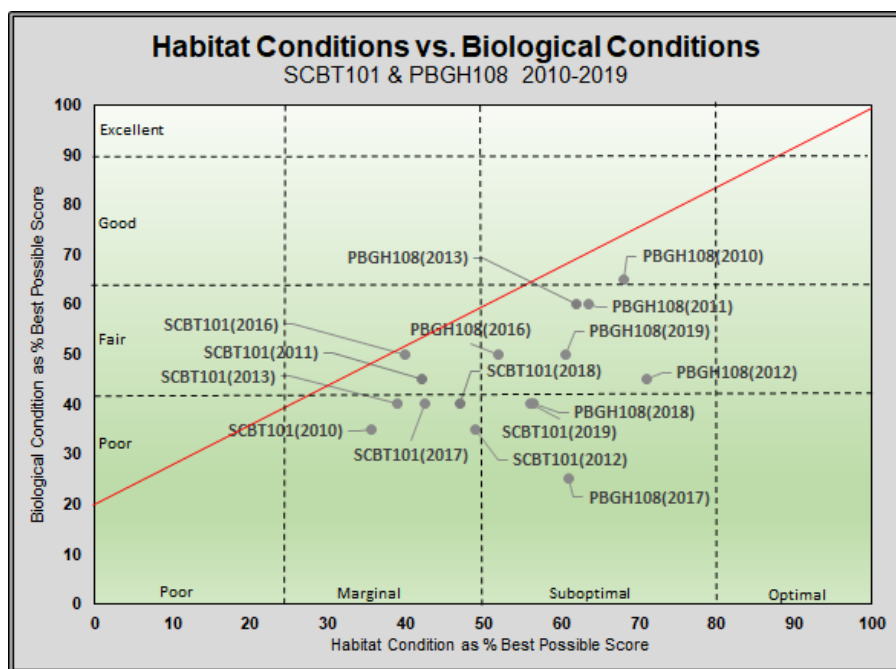
The BIBI score analysis includes determining the presence of EPT taxa; EPT comes from *Ephemeroptera* (mayflies), *Plecoptera* (stoneflies), and *Trichoptera* (caddisflies), which are sensitive species commonly associated with high-quality streams. Before Breewood Tributary restoration, very few EPT taxa were present, and those consisted primarily of moderately tolerant caddisfly larvae. The proportion of EPT individuals ranged from 1 to 7 percent of the total sample. Post-construction, although similar numbers of caddisfly genera were observed, the proportion of EPT individuals increased and now ranges from 26 to 80 percent of the total sample. The number of *Chimarra* species comprised less than 1 percent of the sample in 2014 but accounted for 6 percent of the 2016 sample, 20 percent of the 2017 sample, 12 percent of the 2018 sample, and 17 percent of the 2019 sample. *Chimarra* are slightly less tolerant than the other *Trichoptera* genera observed. Post-construction data indicate the community structure has shifted in response to the restoration. The cause for the abrupt shift in 2019 species composition to a community dominated by *Trichoptera* is not evident from the habitat analysis (described in Section H.2.c), so this shift may be the result of recent upstream water quality improvement projects. Several years may be needed for full recruitment to occur, assuming healthier populations are nearby.

## H.2.c. Breewood Tributary Physical Habitat Assessment

### i. Pre-Restoration Physical Habitat Analysis

Starting in 2010, DEP annually assessed the physical habitat at SCBT101. Pre-restoration monitoring established a baseline for comparison with future habitat assessments. Results indicate the pre-restoration (2010 through 2014) habitat consistently rated *fair*, receiving an average score of 41 percent and a range from 36 to 49 percent. Prior to restoration, DEP found that the stream had poor riffle quality, high embeddedness values, bank instability, and a narrow riparian zone, which lowered the overall habitat score. DEP observed an increase in riffle quality in 2011 and 2012, which contributed to the overall increase in habitat score.

Figure III.H.8 illustrates a comparison of the Breewood Tributary BIBI and habitat conditions with those in the Paint Branch reference stream reach from 2010 to 2019. The reference station, PBGH108, was not monitored during 2014. In 2019, the Breewood habitat score was 56 percent and consistent with preconstruction results. While restoration substantially changed the stream channel, improving instream fish cover, embeddedness, and bank stability, the epifaunal substrate was negatively impacted. In 2019, biological conditions are as expected for the observed habitat.



**Figure III.H.8. BIBI vs. Habitat Condition at Breewood Tributary and Reference Stream, 2010 through 2018**

## ii. In-Situ Water Chemistry Data

DEP recorded in-situ water chemistry measurements in the Breewood Tributary and the reference stream concurrent with the physical habitat assessment. As shown in Table III.H.6, most water-quality parameters (DO, pH, and temperature) were within the expected range at SCBT101 and the reference stream.

Conductivity, expressed in micromhos per centimeter ( $\mu\text{mho}/\text{cm}$ ), was the only parameter that consistently varied among the streams, being elevated (maximum 1,282  $\mu\text{mho}/\text{cm}$ ) at SCBT101 compared with (maximum 336  $\mu\text{mho}/\text{cm}$ ) at the reference stream. Salt in road runoff from the University Boulevard outfall upstream of the station is the most likely explanation for the unusually high conductivity values recorded. DEP will continue to track conductivity values to evaluate whether this pattern is consistent and, therefore, a chronic influence on the benthic community.

Table III.H.6. In Situ Water Chemistry Results at Breewood Tributary (SCBT101) and Good Hope Tributary (PBGH108) Reference Stream <sup>a</sup>									
Station	Type	Benthic Community Rating	Date	DO (more than 5 mg/L)	DO Saturation (percent)	pH (more than 6.5 and less than 8.5)	Conductivity (less than or equal to 300 µmho/cm)	Temperature (°C)	
								Air	Water
SCBT101	Benthic	Poor	5/7/2010	8.73	87	7.30	566	21	15.4
	Benthic	Fair	3/9/2011	10.57	87	7.83	727	5	7.8
	Benthic	Poor	3/19/2012	10.35	90	5.9	565	22	14.3
	Benthic	Poor	3/21/2013	11.47	95	7.86	660	2	6.9
	Benthic	Poor	3/20/2014	9.05	83	7.56	966	12	12.0
	Benthic	Fair	3/9/2016	10.06	90	7.78	N/A <sup>b</sup>	23	11.2
	Benthic	Poor	3/20/2017	9.64	87	7.48	1282	12	10.8
	Benthic	Poor	3/28/2018	12.06	112	6.83	948	10	11.6
	Benthic	Poor	3/5/2019	9.17	84	6.99	1037	15	10.8
PBGH108	Benthic	Good	4/22/2010	10.69	90	6.24	166	12	11.0
	Benthic	Fair	4/18/2011	10.60	104	6.79	143	17	14.4
	Benthic	Fair	4/11/2012	11.27	110	7.36	157	14	10.6
	Benthic	Fair	3/20/2013	12.31	102	6.27	212	9	7.2
	Benthic	Fair	3/17/2016	11.3	108	7.41	239	23	11.2
	Benthic	Poor	3/21/2017	10.54	87	7.73	336	7	7.0
	Benthic	Poor	3/19/2018	13.36	107	6.80	278	19	5.3
	Benthic	Fair	3/11/2019	10.59	94	6.50	352	16	9.5

<sup>a</sup> PBGH108 was not monitored in 2014. Neither station was monitored in 2015 when the stream restoration was done.

<sup>b</sup> Conductivity probe failed calibration (recorded value was 1017)

°C = degrees Celsius

## H.2.d Breewood Tributary Physical Geomorphic Assessment

DEP established two study areas (20-bankfull widths) in 2010 and 2011 to assess physical geomorphology changes over time in the Breewood Tributary. Study Area 1 (established in 2011) extends from the outfall channel below University Boulevard to Breewood Tributary. Study Area 2 (established in 2010) extends downstream from the end of Tenbrook Drive to just upstream from Sligo Creek Parkway and includes the biological monitoring station at SCBT101 (Figure III.H.2).

Figures III.H.9 and III.H.10 depict representative cross-sections of Study Areas 1 and 2 before (2011 through 2013) and after (2015 through 2018) restoration. Pre-restoration surveys indicate degraded, entrenched channels with steep banks, little to no floodplain connection, low sinuosity, and high erosion potential. A geomorphic assessment of the Breewood Tributary was not conducted in 2014 due to ongoing stream restoration activities. The Breewood Tributary restoration was completed in 2015, and the first post-restoration surveys were conducted during the following winter.

Restoration activities involved installing a series of pools and riffle grade controls to mitigate the high erosive flows from the University Boulevard outfall. After restoration, pools dominate the reach at 68 percent, compared with grade-control riffles at 32 percent. Throughout monitoring activities, particle size ( $D_{50}$ ) at Study Area 1 were highly variable; this  $D_{50}$  variability most likely resulted from alternate periods of deposition and scouring due to high stormflows from the outfall. At Study Area 2, average  $D_{50}$  increased after restoration. In 2013, the last year of preconstruction,  $D_{50}$  was 8.7 millimeters. Following restoration, average  $D_{50}$  has remained above 40 millimeters. Also, after restoration, Study Area 2  $D_{50}$  has increased by approximately 500 percent, indicating substantially less deposition of fine material are downstream of the restored reach (Table III.H.7).

Figures III.H.9 and III.H.10 show how drastically restoration changed the cross-sections of Study Areas 1 and 2. The channel bed was raised, and banks were graded to open up the cross-sections and allow the stream to access the floodplain. Post-restoration (2015 through 2019) cross-section surveys indicate improved width and depth and entrenchment ratios except for Study Area 2 cross-section 2. This cross-section was not elevated during the restoration, although brush bundles were installed to protect the banks. The brush bundles were placed in the cross-section, making accurately measuring the earthen bank impossible. Further, the brush bundles are unstable, which accounts for the variation in Study Area 2, cross-section 2 since 2015. Entrenchment ratios of 1 to 1.4 represent entrenched streams, 1.41 to 2.2 indicate moderately entrenched streams, and greater than 2.2 represent only slightly entrenched streams with a well-developed floodplain.

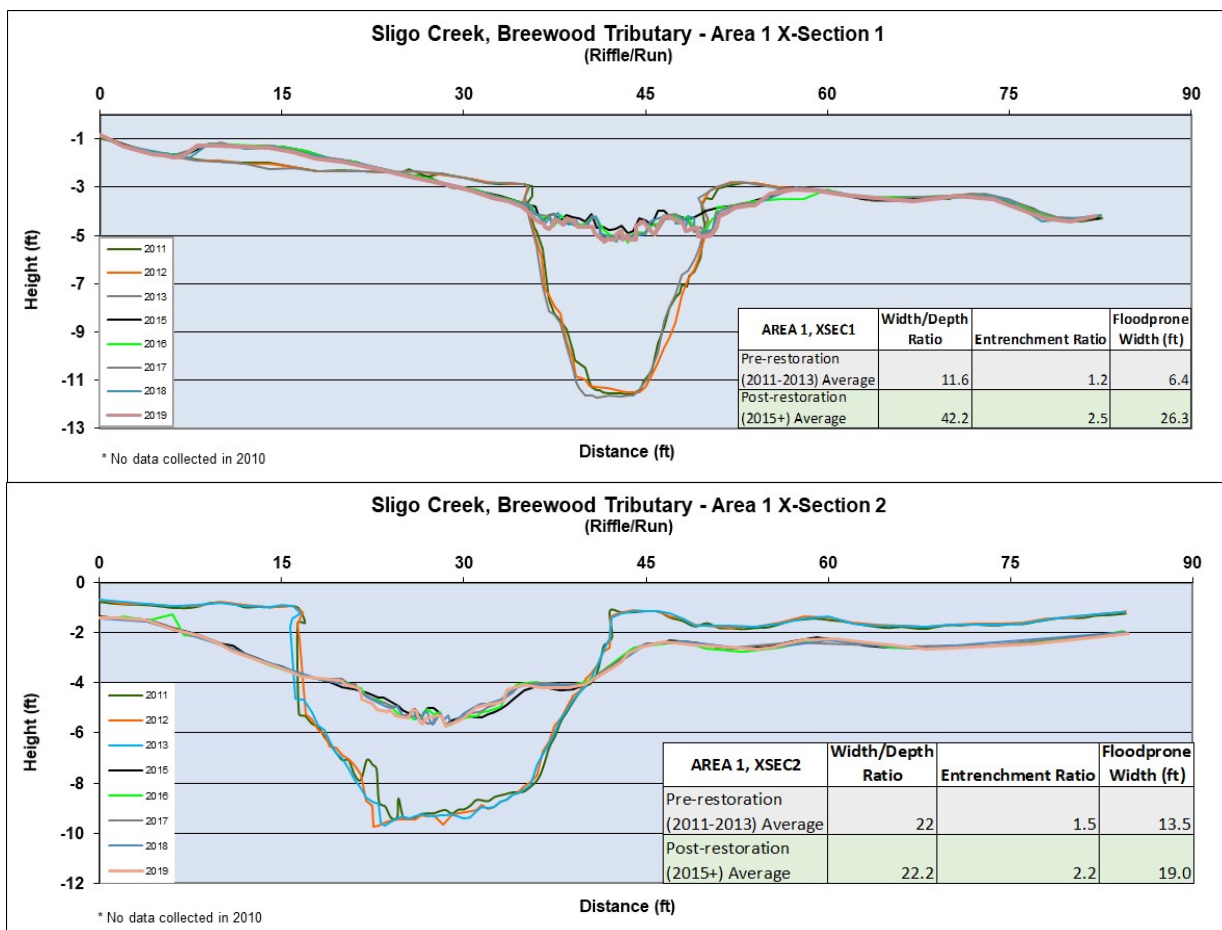
**Table III.H.7. Bed Material Composition and Median Grain Size ( $D_{50}$ ) Analysis**

Station and Area	Date	D-50	Description
SCBT101-A1	6/7/2011	0.062	Silt/Clay
SCBT101-A1	3/1/2012	0.65	Course sand
SCBT101-A1	2/20/2013	0.55	Course sand
SCBT101-A1	No data for 2014		
SCBT101-A1	2/8/2016	0.062	Silt/Clay
SCBT101-A1	12/5/2016	39	Very course gravel
SCBT101-A1	1/11/2018	0.062	Silt/Clay
SCBT101-A1	12/11/2018	51	Very course gravel

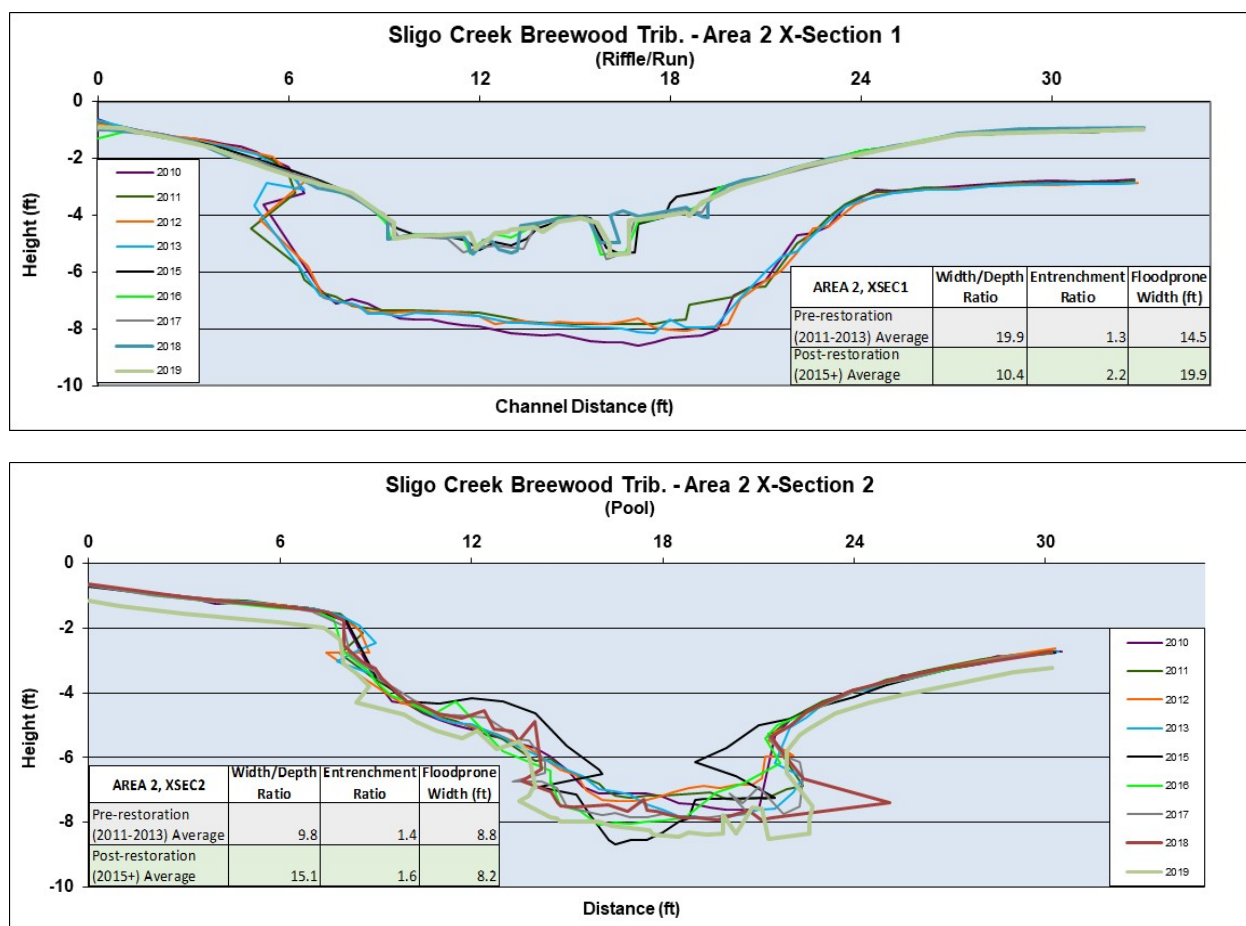


**Table III.H.7. Bed Material Composition and Median Grain Size (D<sub>50</sub>) Analysis**

Station and Area	Date	D-50	Description
SCBT101-A1	1/08/2020	0.062	Silt/Clay
SCBT101-A2	7/8/2010	2.8	Fine gravel
SCBT101-A2	3/9/2011	12	Medium gravel
SCBT101-A2	2/28/2012	2.8	Very fine gravel
SCBT101-A2	2/15/2013	8.7	Medium gravel
SCBT101-A2	No data for 2014		
SCBT101-A2	2/8/2016	40	Very course gravel
SCBT101-A2	12/9/2016	40	Very course gravel
SCBT101-A2	1/22/2018	55	Very course gravel
SCBT101-A2	1/26/2019	50	Very course gravel
SCBT101-A2	12/5/2019	53	Very course gravel



**Figure III.H.9. Representative Cross-Sections from Breewood Tributary Study Area 1**



**Figure III.H.10. Representative Cross-Sections from Breewood Tributary Study Area 2**

Restoration has resulted in a more stable channel, with lower erosion potential. Erosive stormflows that were once confined and concentrated in an entrenched channel with erodible soils now have space in the floodplain to spread out and slow down. The design intends for water to filter through the hyporheic zone to reduce surface-flow volumes and improve water quality. Figure III.H.11 represents a cross-section within Study Area 1, demonstrating the severe down-cutting that was prevalent pre-restoration in this part of the Breewood Tributary. Figure III.H.12 shows the Breewood Tributary post restoration.



*Figure III.H.11. Pre-Restoration Upstream View of Sligo Creek Breewood Tributary Study Area 1, 2013*



*Figure III.H.12. Post-Restoration Upstream View of Sligo Creek Breewood Tributary Study Area 1, 2015*



## H.2.e. Summary of Chemical, Biological, and Physical Monitoring of the Breewood Tributary

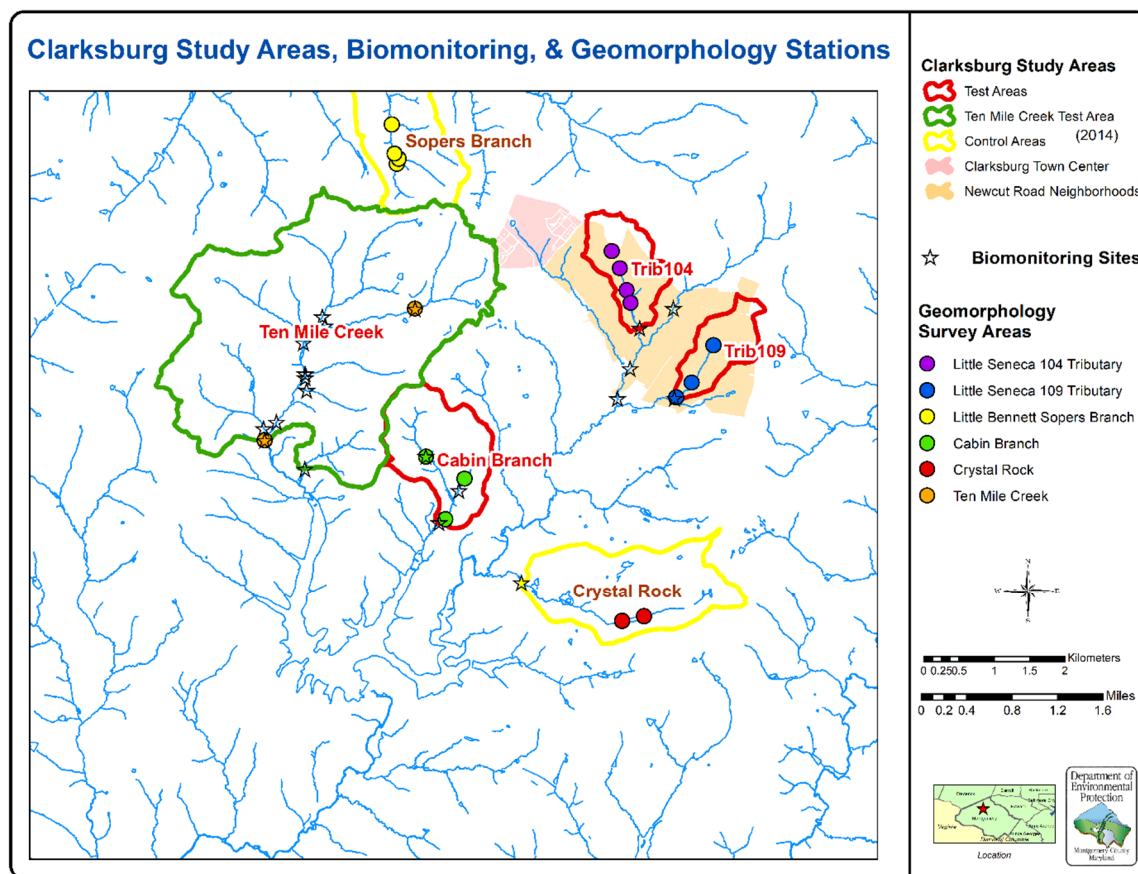
Monitoring Breewood Watershed is intended to generate information about the effectiveness the intensive watershed restoration to improve water quality and stream conditions. The study focuses on comparing pre-restoration conditions with post-restoration conditions. Watershed monitoring began in 2009, and as outlined in Table III.H.3, various projects were installed beginning in 2014 through 2018. During this period, data collected reflect transitional conditions and construction impacts. While some limited statements can be inferred about conditions, evaluating the overall project from these data is impossible. Beginning in 2018, the data provide information on the completed watershed restoration; these data can be compared with data collected between 2009 and 2014 to evaluate the restoration's effectiveness. DEP will continue collecting data for multiple years to create a robust data set that facilitates conclusively evaluating project impacts.

2010 through 2014 monitoring results document pre-stream restoration conditions and provide evidence that the Breewood Tributary was impaired. After stream restoration was completed in 2015, physical geomorphic surveys indicate many dramatic improvements to channel morphology. Increased floodplain access, reduced erosion, and hyporheic zone interaction all are intended to result in many ecological benefits. The benthic community structure has shifted since channel restoration was completed, but that shift has not demonstrated an obvious improvement that can be attributed to channel restoration. Based upon its geographical location in the watershed, this headwater stream has limited recruitment potential. The benthic community has not had adequate time to demonstrate improvement from the recently completed upstream projects addressing water quality. DEP will continue to monitor annually to evaluate and substantiate the biology and habitat improvements that have been documented and anticipated as a result of the restoration. For now, the benthic community remains a tolerant community, which reflects a degraded stream condition likely attributable to lack of recruitment and historical upstream water-quality issues.

## H.3 Stormwater Management Assessment

The Permit requires the County to assess effectiveness of SWM practices found in the *2000 Maryland Stormwater Design Manual* for stream-channel protection. During the previous Permit cycle, MDE approved DEP's proposal to conduct the required monitoring within a developing area of the Clarksburg SPA. Specific monitoring requirements include an annual stream profile, survey of permanently mounted cross-sections, and baseline conditions comparison.

DEP established monitoring stations in two drainage areas: (1) "control area" where the drainage area will remain undeveloped and mostly forested, and (2) "test area" where development occurs in the contributing drainage area. The control area is located in Soper's Branch to the Little Bennett Creek (LBSB101); methodology is defined in the County's 2003 NPDES Report, Part III.D.2 (Appendix M). The test area is located in the Newcut Road Neighborhood Tributary to Little Seneca Creek (LSLS104). Figure III.H.13 illustrates the locations of the two areas and their contributing drainage areas. The control area (shown in yellow) is labeled "Soper's Branch," and the test area (shown in red) is labeled "Trib104."



**Figure III.H.13. Location of the CMP Test and Control Areas (including biological and geomorphic survey location)**

Both drainage areas include a stream gauge at the bottom of each study catchment. The test and control areas are also visited once per year to monitor biological conditions, habitat, and physical and chemical data. Benthic macroinvertebrates are monitored during the spring index period (March 1 through April 30); however, fish were not used as indicators for the small, first-order streams because the fish habitat is often limited due to lack of sufficient flow.

Figure III.H.13 also shows the locations of four other areas monitored as part of the Clarksburg Monitoring Partnership (CMP), a consortium of local and federal agencies and universities. Two additional test areas were initially selected for the CMP: one area in the Newcut Road Neighborhood labeled as Trib109 and one in the Cabin Branch Neighborhood labeled as Cabin Branch (both shown in red). One additional control area labeled as Crystal Rock (shown in yellow) was established in an existing developed area in Germantown. More recently, a test area was established within the Ten Mile Creek Watershed (shown in green).

All test and control areas have United States Geological Survey (USGS) flow gauges installed where continuous stream flow data are being collected. Four rain gauges monitor area rainfall and document local rainfall intensities to correlate rainfall to stream flow; one gauge is located at Little Bennett Regional Park, two gauges are located within Black Hill Regional Park, and one gauge is located within the headwaters of Ten Mile Creek at the Kingsley School Environmental Center. Figure III.H.13 also shows the location of a study area (shown in green) in the Ten Mile Creek Watershed. This study area contains two USGS flow gauges, as well as two rain gauges.



The CMP is using a before-after-control-impact design or paired catchment (watershed) design approach<sup>7</sup> to assess the land use changes and the impacts to stream conditions. The CMP has been monitoring stream conditions since 2004. CMP is also using light detection and ranging (LiDAR) elevation data and imagery to provide greater resolution in mapping landscape changes at this smaller drainage area scale than is possible using traditional aerial photography.

### H.3.a Status of Development in the Clarksburg Special Protection Area Permit Required Test Area

The drainage catchment to the Newcut Road Neighborhood test area (LSLS104) primarily contains two developments: Greenway Village and Clarksburg Village. All Greenway Village project phases are complete, and ESC structures have been converted to SWM facilities. Phases I through IV were complete by 2012, while Phase V was completed during Spring 2015. Clarksburg Village Phases I and II are also complete; Phase I transitioned from construction to post-construction during 2011, and Phase II transitioned to post-construction during May 2017. The land composition in the Soper's Branch control area drainage catchment largely comprises park land, and as a result, this drainage remains relatively unchanged.

### H.3.b Precipitation, Infiltration, and Annual Flows

Average annual precipitation is about 42 inches in the Baltimore-Washington D.C. area.<sup>8</sup> Average monthly precipitation varies slightly throughout the year, but localized spring and summer thunderstorms can cause significant variations in precipitation among nearby locations.<sup>9, 10</sup> To assure accurately capturing localized events, two rain gauges were established for the CMP at Black Hill Regional Park in Cabin Branch (2004) and Little Bennett Regional Park in Soper's Branch (2003). Two additional rain gauges were installed in 2014 to monitor precipitation events in Ten Mile Creek. The data collected provide information about rainfall patterns and quantities, storm durations, storm mean intensity, and storm peak intensity.

### H.3.c Hydrologic Data Analysis and Interpretation

Stream flow gauges continue to provide data that allows instantaneous peak and daily mean discharges and stream height response during storm events to be calculated. Table III.H.8 describes the seven project flow gauges.

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<sup>7</sup> Farahmand T, S. Fleming, E. Quilty. 2007. "Detection and visualization of storm hydrograph changes under urbanization: an impulse response approach." *Journal of Environmental Management* 85: 93-100.

<sup>8</sup> National Weather Service (NWS). 2008. Annual precipitation information for Washington, D.C. Area Accessed at <http://www.erh.noaa.gov/lwx/climate/iad/iadprecip.txt>. Accessed April 14.

<sup>9</sup> Doheny E., R. Starstoneck, E. Striz, P. Maynor. 2006. *Watershed characteristics and pre-restoration surface-water hydrology of Minebank Run, Baltimore County, Maryland, water years 2002-04*. U.S. Geological Survey Scientific Investigations Report 2006-5179, 42 pp

<sup>10</sup> James R. 1986. "Maryland and the District of Columbia surface-water resources." In: *National water summary 1985: Hydrologic events and surface-water resources*. U.S. Geological Survey Water Supply Paper 2300, pp. 265-270.

Annual runoff from stream gauges in the Newcut Road Neighborhood test area (USGS Gauge 01644371) and the Soper's Branch control area (USGS Gauge 01643395) was compared with rainfall data from the Cabin Branch and Soper's Branch rain gauges to determine how much average annual precipitation infiltrates into the groundwater or is released into the atmosphere through evapotranspiration within the gauge drainage areas. Data were obtained from the online USGS Baltimore Office water year reports<sup>11</sup> for water years 2005 through 2019. Water years cover October 1 through September 30 of each year. The 2019 USGS water data reports for the two stream gauges are available online.<sup>12</sup>

**Table III.H.8 Descriptions of the USGS Stream Gauges in the Clarksburg Study Area**

<b>Gauge ID Number</b>	<b>Name</b>	<b>Date Started</b>	<b>Drainage Area (square miles)</b>	<b>Drainage Area (acres)</b>	<b>Closest Test or Control Area</b>
01644371	Newcut Road Neighborhood Tributary to Little Seneca Creek near Clarksburg ("Test Area")	5/2004	0.43	275.2	Test Area (LSLS104)
01643395	Soper's Branch at Hyattstown ("Control Area")	2/2004	1.17	748.8	Control Area (LBSB201)
01644375	Little Seneca Creek Tributary near Germantown	6/2004	1.35	864.0	Crystal Rock
01644372	Little Seneca Creek Tributary at Brink	6/2004	0.37	236.8	LSLS109
01644380	Cabin Branch Near Boyds	6/2004	0.79	505.6	Cabin Branch
01644388	Ten Mile Creek Near Clarksburg	6/2013	3.37	2156.8	LSTM301A
01644390	Ten Mile Creek Near Boyds	10/2010	4.48	2867.2	LSTM304

### H.3.d Time of Concentration

Time of concentration (TOC) is the difference in time between the start of rainfall and when discharge begins to increase at the gaging station.<sup>9</sup> This parameter helps define stream response to clearing and grading and subsequent land use changes and increasing imperviousness. With less area for precipitation to infiltrate, runoff reaches the stream in less time. Maryland ESC requirements attempt to moderate this during construction by providing storage for 1 inch of rainfall from a site under construction. However, local site constraints and weather patterns may not allow 1 inch of rainfall from the site to be stored for every storm. For example, storms may be back-to-back storms or an unexpected condition discovered, such as a BMP being located so the local groundwater is intercepted.

Flow and rain data have not been consistently collected over the study period due to various issues, including equipment malfunction. Storms considered for each station are listed in Table III.H.9, which

<sup>11</sup> Doheny, E. 2009. Personal communication with Edward Doheny, United States Geological Survey, Baltimore, Maryland.

<sup>12</sup> USGS water data reports are available at <https://waterdata.usgs.gov/nwis>.

includes storm events only where a response occurred. Storm events were chosen over a variety of durations, intensities, and seasons.

TOC in Soper's Branch has been variable throughout the study period (Figure III.H.14). Average TOC ranged from 17 minutes in 2008 to 398 minutes in 2018. All averages were more than 125 minutes, except in 2008. Multiple results were greater than 400 minutes, with maximum TOCs ranging from 25 minutes in 2008 to 1,190 minutes in 2017.

Table III.H.9 Storm Events Used in TOC Analysis															
Station Name	Drainage Area (acres)	Year (2005 through 2018)													
		2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		Number of Storms													
Soper's Branch	749	5	6	4	14	14	8	4	12	10	8	17	37	21	25
Newcut Road Neighborhood Tributary	275	8	0	4	14	16	8	5	18	15	20	28	57	31	25

No pre-construction results are available for the Newcut Road Neighborhood Tributary; the USGS flow gauge was not installed until after construction was complete. The average TOC at the Newcut Road Neighborhood Tributary ranges from 48 minutes in 2013 to 202 minutes in 2018 (Figure III.H.15). With few exceptions, averages have been consistently less than 90 minutes. Maximum TOC ranges steadily increased from 200 minutes in 2008 to 1190 minutes in 2017. The maximum value reported in 2019 was 755 minutes. The relatively consistent nature of the results may be attributed to SWM in the watershed. During rain events, runoff reaches the SWM structures relatively quickly. If functioning properly, these structures release flow at predetermined rate. One possible explanation for the increase in maximum TOC may be the design of the SWM structures, which includes 2 feet of dead storage space to promote infiltration. Trends will continue to be monitored over time.

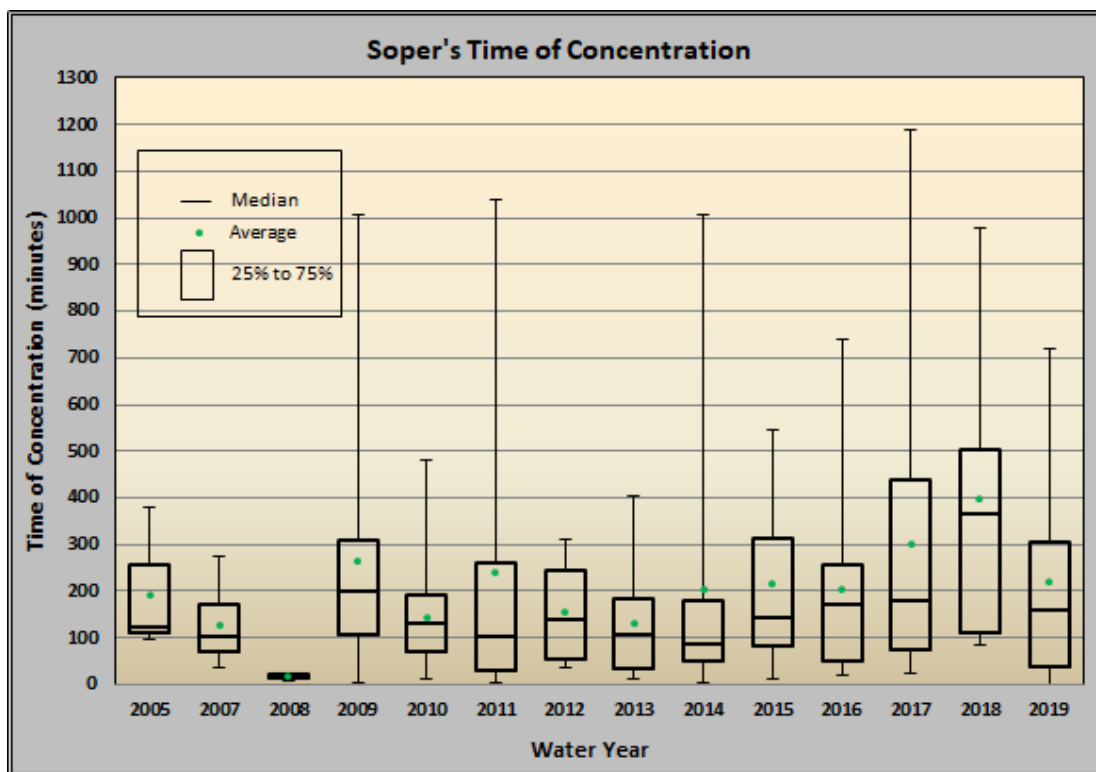


Figure III.H.14. TOC for Soper's Branch, 2005 through 2019

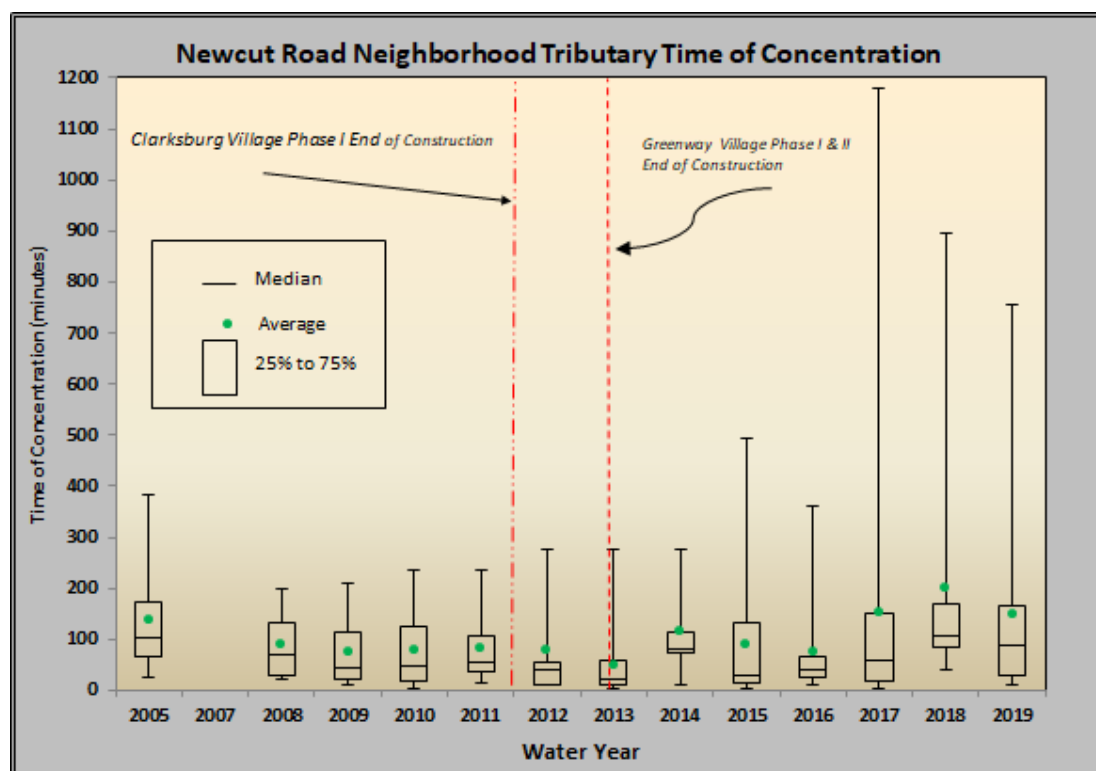
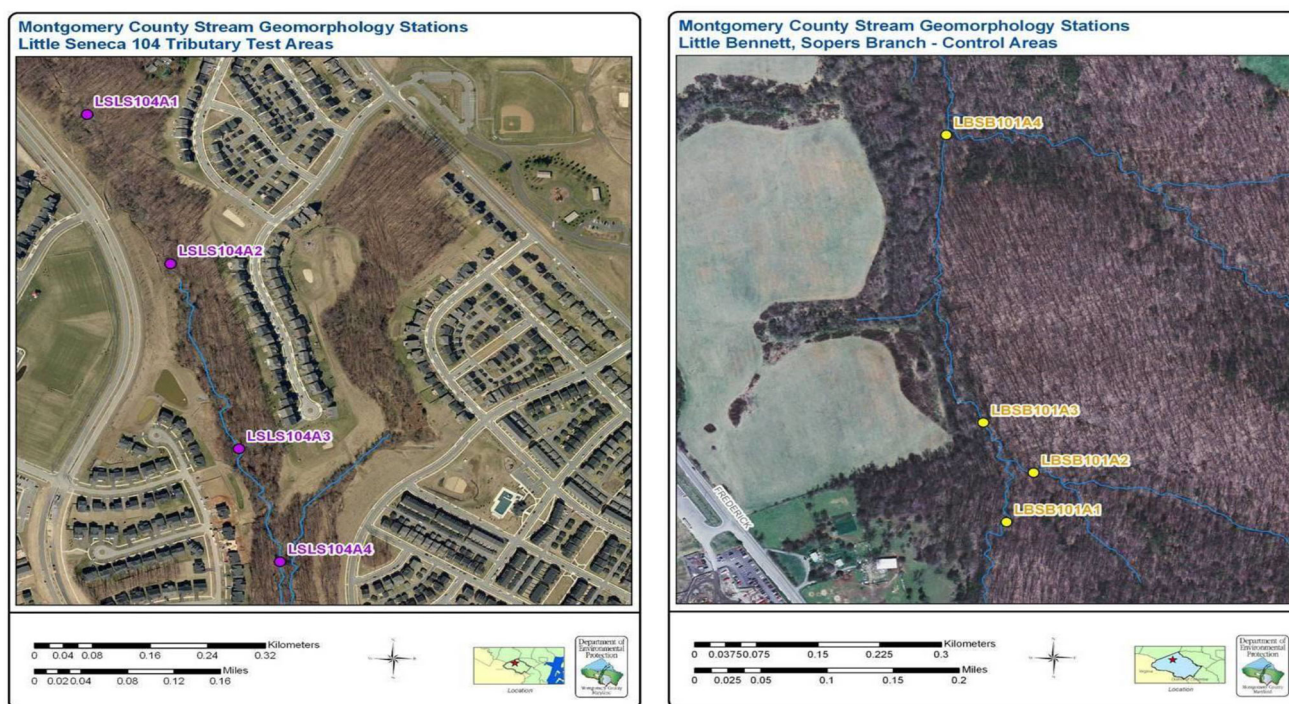


Figure III.H.15. TOC for Newcut Road Neighborhood Tributary, 2005 through 2019

### H.3.e Stream Geomorphology Monitoring

Figure III.H.16 illustrates the survey locations for stream geomorphology monitoring in the Little Seneca Creek and Newcut Road Neighborhood Tributary test area and the Little Bennett Creek and Soper's Branch control area. Multiple surveys were completed in both areas to document the temporal change in stream channel morphology. Survey information includes longitudinal profiles, cross-sections, bed composition (pebble counts), and sinuosity.

Surveys were established within similar habitat sections of each study stream. At that time, the upstream habitat sections were steeply graded, straight channels (low sinuosity index), consisting mostly of riffle habitat. More downstream sections were characterized by decreasing slopes, increasing sinuosity, and pools becoming more prevalent. Four channel cross-section locations in both study areas are labeled from 1 through 4, with location 4 representing the most downstream cross-section. All cross-sections used in this comparison were measured in riffle/run stream areas, which serve as the stream's grade control and are areas that resist changes to cross-section features.



**Figure III.H.16. Geomorphology Survey Locations: Little Seneca Creek and Newcut Road Neighborhood Test Area (left) and Little Bennett Creek Soper's Branch Control Area (right)**



### H.3.f Data Analysis and Interpretation

Development alters an area's surface hydrology, resulting in rainfall infiltration decreases and stormwater runoff increases. These changes then cause corresponding higher peak flows and scour in the receiving stream channel. The eroded material is carried away and deposited downstream (aggradation). As the development site stabilizes, less aggradation of the stream from overland sediment occurs.<sup>13</sup> To document stream physical changes during development, DEP annually monitors cross-sections, pebble counts for average particle size, stream bed elevation, and measures of sinuosity.

D<sub>50</sub> for substrate material in the Newcut Road Neighborhood Tributary exhibited an increase at the most downstream study area (Area 4) through 2010. In 2011, the average particle size decreased at the test area for the first time since 2004, corresponding with the beginning of the post-construction period at Clarksburg Village Phase I. The average particle size since 2011 has fluctuated between very fine gravel and medium gravel. Increased runoff rates during construction may have been flushing the finer particles downstream, while the coarser, parent-material aggregates of the stream channel were left in place. Increased impervious area may result in more runoff and, thus, more sediment reaching the stream. To reach equilibrium, sediment is removed from the stream channel in one location and deposited downstream in another area. Little change in particle size over time would indicate that the system has reached equilibrium.

Representative cross-section graphs from the Newcut Road Neighborhood test area illustrate change over time (Figure III.H.17). Due to challenges with the 2019 data, cross-section data from 2020 were used to analyze changes to the Newcut Neighborhood Tributary XS-3. The cross-sections generally show channel aggradation corresponding to the most active years of construction (2004, 2005, and 2006) and channel degradation and some widening from 2007 to 2011 as the test area neared final elevations and stabilization. In 2012, approximately 1 foot of aggradation was observed in cross-section 1. In 2013 and 2014, little change was noted. In 2015, however, the channel in cross-section 1 scoured out approximately 1 foot. Changes are most evident in the lower portion of the cross-section profiles, at or below frequent storm elevation. Little change was observed in 2016 through 2020 (Figure III.H.18).

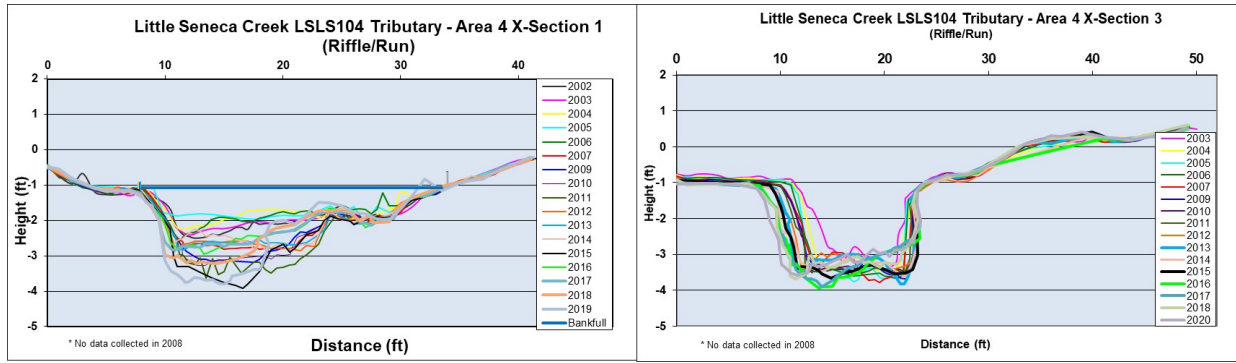
In contrast, representative sections from the Soper's Branch control area (Figure III.H.19) showed the channel area at the control station has also increased but not as rapidly as at the test area, indicating more-stable hydrologic pattern and possibly indicating less sediment moving through the system.

Figure III.H.20 shows longitudinal profile data for the downstream study area at the Newcut Road Neighborhood Tributary test area (Area 4). Figure III.H.21 shows the longitudinal profile data for the downstream study area at the Soper's Branch Control test area (Area 4). The stream bed elevation in the test area tributary has shown considerable instability since construction began in 2005 and features frequently change as sediment loads move through the system. Whereas over the same time period, greater consistency was observed in stream bed elevation and feature type at the control station. The percent of riffle/run to percent pool were examined at the test and control areas and revealed no observable trends.

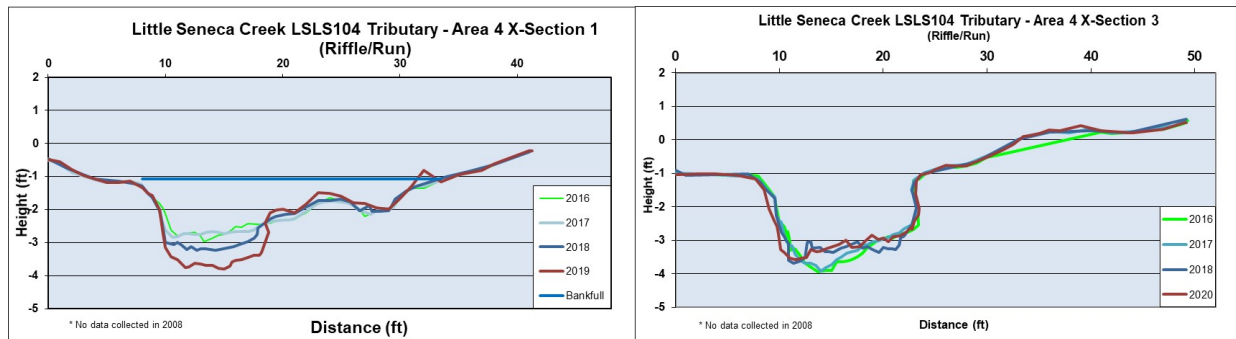
Biological, physical, and hydrologic monitoring results indicate the stream channel in the test area may still be in a state of flux as the system responds to new development. Preliminary results indicate the change in land use from agricultural to residential has affected the test area, causing instability (erosion) in the stream channel. The streams will remain unstable as they adjust to receiving more runoff at a faster rate from impervious surfaces in the newly developed area.

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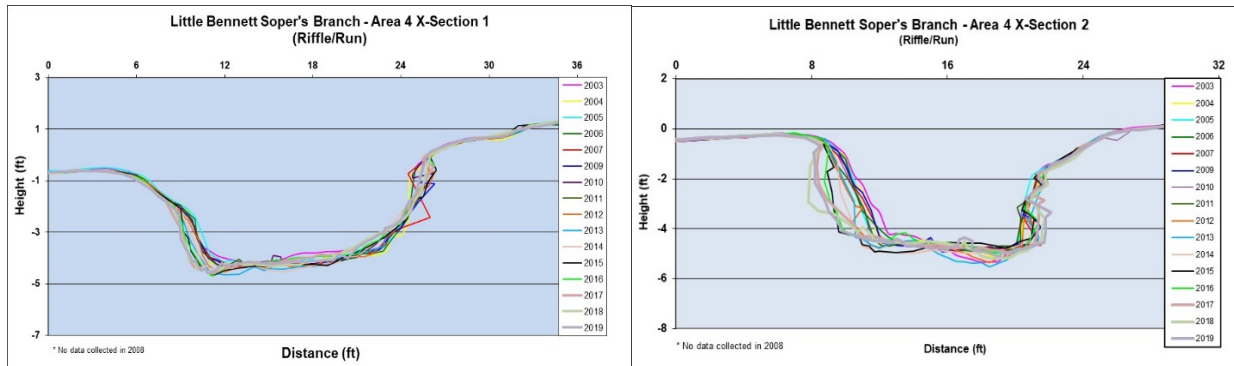
<sup>13</sup> Paul, M. and J. Meyer. 2001. "Streams in the urban landscape." *Annual Review of Ecology and Systematics* 32: 333-365.



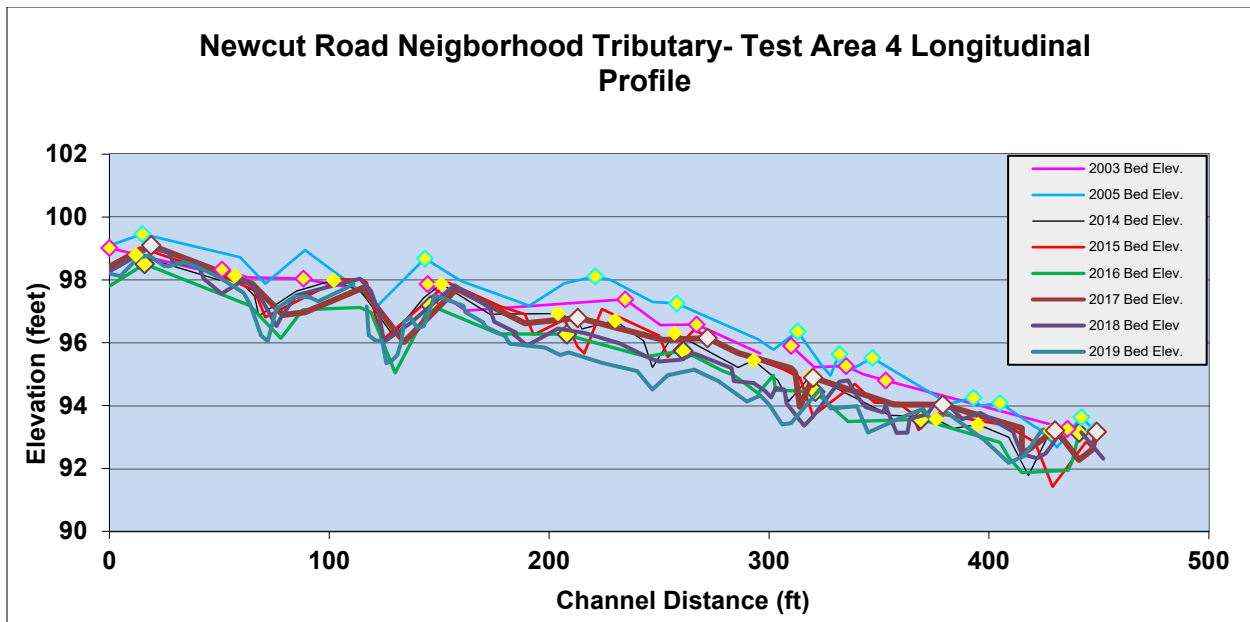
**Figure III.H.17. Newcut Road Neighborhood Tributary Test Area 4 Cross-Sections, 2002 through 2020**



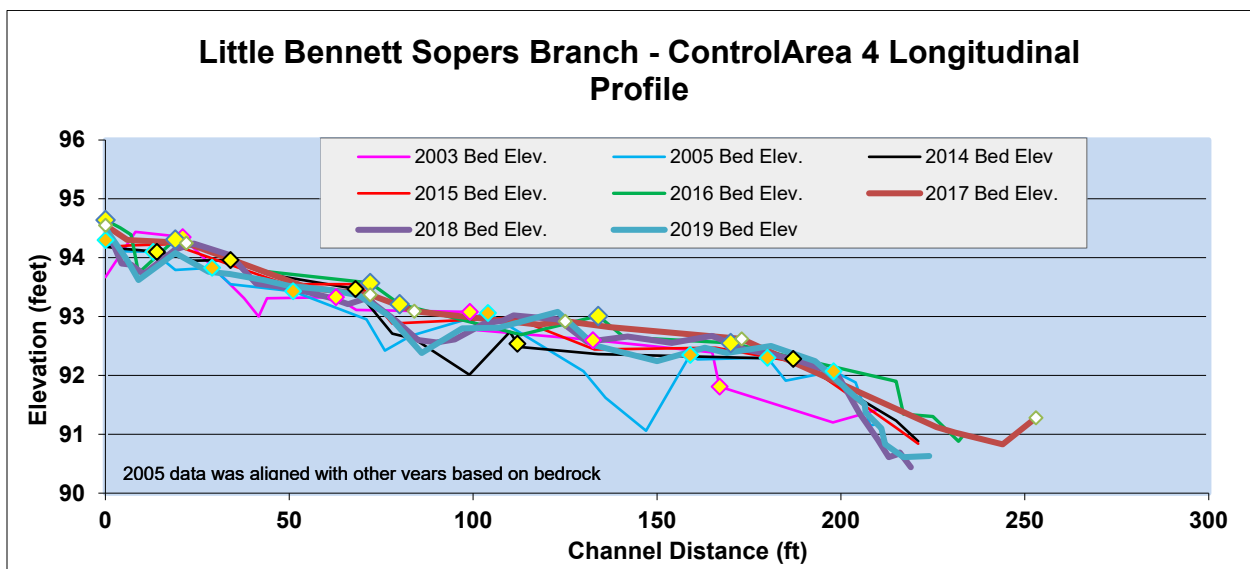
**Figure III.H.18. Newcut Road Neighborhood Tributary Test Area 4 Cross-Sections, 2016 through 2020**



**Figure III.H.19. Little Bennett Soper's Branch Control Area 4 Cross-Sections, 2003 through 2019**



*Figure III.H.20. Longitudinal Profiles for Newcut Road Neighborhood Tributary Test Area 4, 2003 through 2019*



*Figure III.H.21. Longitudinal Profiles for Soper's Branch Control Area 4, 2003 through 2019*

## I. Program Funding

### I. Program Funding

1. Annually, a fiscal analysis of the capital, operation, and maintenance expenditures necessary to comply with all conditions of this permit shall be submitted as required in PART IV below.
2. Adequate program funding to comply with all conditions of this permit shall be maintained.

The Permit requires the County to submit annual funding reports for capital, operation, and maintenance expenditures in database format specified in Permit Part IV, Attachment A. This section summarizes capital, operation, and maintenance expenditures and water quality protection charge (WQPC)-generated revenue.

Beginning with FY13, County-reported expenditures include data from multiple County departments and Montgomery County Public Schools, a co-permittee. The expenditure data do not include operational Departments of Transportation and General Services costs associated with pollution prevention on County property because these agencies cannot separate these specific costs from their other operating costs.

During FY20, reported expenditures associated with all Permit requirements were \$59,696,011, which is a decrease of 10.4 percent over FY19 Permit expenditures. The decrease in operating expenditures resulted from reduced programming due to the COVID-19 pandemic. Decreased expenditures also resulted from decreasing design and construction projects while a new MS4 permit is being issued. Table III.I.1 lists FY total expenditures in thousands of dollars.

**Table III.I.1. Total Expenditures for County MS4-Related Programs by Fiscal Year**

Fiscal Year	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Total expenditures <sup>a</sup> (in thousand dollars)	27,415	30,097	30,302	44,773	51,728	53,506	50,536	64,245	65,652	66,648	59,696
Change from Prior FY (percent)	N/A	9.8	0.7	47.8	15.5	3.4	(5.6)	27.1	2.2	1.5	(10.4)

<sup>a</sup> Personnel, administrative, and debt service costs were not reported FY10 through FY12. Total budgeted expenditures include all operating expenditures for County MS4 permit and general-funded, special enterprise-funded (for DEP and DPS), and WQPC-funded programs. They also include debt service payment for CIP projects and general-funded and WQPC-funded CIPs.

MDE requested that capital costs, operational costs, and if applicable, funds raised by the WQPC be broken down. Table III.I.2 identifies operating and capital expenditures for FY20, and Table III.I.3 summarizes FY20 actual revenue generated for MS4 Permit requirements. Expenditures in Tables III.I.1 and III.I.2 are provided in detail by program area (see Appendix A, Table L, Fiscal Analysis). The FY20 program funding includes revenue generated from the WQPC, best management practice (BMP) monitoring fee, tree canopy fee, and bag tax.

**Table III.I.2. FY20 Operating and Capital Expenditures**

Expenditure Type	Expenditure
Operating <sup>a</sup>	\$45,247,918
Capital <sup>b</sup>	\$14,448,093
<b>Total Expenditures</b>	<b>\$59,696,011</b>

<sup>a</sup> All operating expenditures for County MS4 Permit include general-funded, special enterprise-funded (for DEP and DPS), and WQPC-funded programs. They also include debt service payment for CIPs

<sup>b</sup> Capital expenditures include general-funded and WQPC-funded CIPs.

**Table III.I.3. FY20 Revenues**

Revenue Source	Amount
WQPC revenues	\$38,849,227
BMP monitoring fee revenue	\$42,412
Tree canopy fee revenue	\$496,000
Bag tax revenue	\$2,618,409
<b>Total revenues</b>	<b>\$42,006,048</b>

## I.1 FY20 Watershed Restoration Expenditures

The Permit requires the County to submit estimated costs and actual expenditures for watershed restoration program implementation. Table III.I.4 summarizes FY10 through FY20 Capital Improvement Program (CIP) costs for both watershed assessments and watershed restoration projects. CIP expenditures during FY20 are \$10 million less than expended in FY19 due to reductions in restoration design and construction projects while awaiting the new MS4 Permit to be issued.

The FY21 through FY26 CIP budget, approved by the Montgomery County Council on September 7, 2020, includes program changes for the County to use to meet its watershed improvement goals. Table III.I.5 summarizes the approved FY21 through FY26 CIP budget; this budget also includes estimated spending during FY20 and consolidated CIP project funding into the “SWM Retrofit Countywide,” thereby explaining why projects listed in Table III.I.5 show estimated spending as “0” after FY20.



**Table III.I.4. FY10 through FY20 Capital Improvement Program Expenditures for Watershed Assessment and Restoration**

<b>Fiscal Year</b>	<b>Total FY Expenditures from Watershed Assessments</b>	<b>Total FY Expenditures from Watershed Restoration</b>	<b>Total FY CIP Expenditures for Watershed Assessment and Restoration</b>
2010	\$433,800	\$2,942,100	\$3,375,900
2011	\$749,130	\$3,904,222	\$4,653,352
2012	\$502,244	\$8,168,571	\$8,670,815
2013	\$879,435	\$9,274,295	\$10,153,730
2014	\$1,658,517	\$16,490,211	\$18,148,728
2015	\$659,634	\$16,934,497	\$17,594,131
2016	\$432,084	\$10,293,457	\$10,725,541
2017	\$990,436	\$17,933,330	\$18,923,766
2018	\$795,655	\$18,310,883	\$19,106,539
2019	\$858,171	\$17,438,101	\$18,296,272
2020	\$667,346	\$6,793,224	\$7,460,569
<b>Total</b>	<b>\$8,626,452</b>	<b>\$128,482,891</b>	<b>\$137,109,343</b>

**Table III.I.5. Department of Environmental Protection-Approved (September 2020) and FY21 through FY26 Stormwater Management Capital Improvement Program Budget (in thousand dollars)**

<b>Projects</b>	<b>Estimated FY20</b>	<b>CIP 5-Year Cycle Total (FY21 through FY26)</b>	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>	<b>FY24</b>	<b>FY25</b>	<b>FY26</b>
SWM retrofit - countywide	9,000	74,750	11,400	16,030	11,810	11,480	12,090	11,940
SWM retrofit - government facilities	32	0	0	0	0	0	0	0
SWM retrofit - roads	8	0	0	0	0	0	0	0
SWM retrofit - schools	50	0	0	0	0	0	0	0
Miscellaneous stream valley improvement	7,340	5,110	3,980	1,130	0	0	0	0
SWM - facility planning	960	5,510	710	920	940	960	980	1,000
Major structural repair	4,170	21,960	4,860	4,690	3,150	3,150	3,060	3,050
Wheaton reg. dam flooding mitigation	443	4,900	170	3,760	970	0	0	0
<b>Total:</b>	<b>22,003</b>	<b>112,230</b>	<b>21,120</b>	<b>26,530</b>	<b>16,870</b>	<b>15,590</b>	<b>16,130</b>	<b>15,990</b>

During FY19, the County applied for low-cost financing through the Maryland Water Quality Revolving Loan Fund, which will be secured by the WQPC. Through this loan program, the County will save an estimated \$22 million in financing costs over the life of the loans, as compared with traditional bond funding. On December 20, 2019, the County closed on two loans to fund restoration projects that will be used for MS4 restoration credit anticipated for the next MS4 permit; the two loans also will fund repairing and replacing stormwater facilities and conveyance systems. The total loan amount awarded to the County is \$50,667,320. The County also modified its approach of using separate contracts for impervious surface restoration design and construction of SWM facilities and is pursuing a design-build contracting vehicle to support the next permit's expected restoration requirements. This mechanism has provided significant cost efficiencies in other jurisdictions. As a result of these changes to the capital budget, the WQPC rate in FY20 remained the same as in FY19.

## I.2 Financial Assurance Plan

On February 15, 2021, Montgomery County submitted a draft biennial Financial Assurance Plan (FAP) to MDE. Maryland law requires Phase I MS4 jurisdictions to project annual and 5-year costs to meet the MS4 permit requirements. The FAP must demonstrate the jurisdiction has sufficient funding in its current and subsequent FY budgets to meet its estimated costs for the 2-year period immediately following the FAP filing date. MDE MS4 guidance requires the FAP to include annual and projected 5-year costs needed to meet the permit's impervious surface restoration (ISR) plan requirement, more commonly known as the 20-percent restoration requirement. Montgomery County's draft FAP demonstrates that its 2010 MS4 permit impervious surface restoration requirement was fulfilled as of December 31, 2018, midway through FY19. As of the draft FAP filing, the County has not received a new MS4 permit and is still operating under an administrative continuance of the 2010 permit.

The expenditures and revenue data provided to MDE in the County's draft FAP use different assumptions than the information required for this MS4 annual report. While they are based on the same information, they cannot be directly compared.

## J. Total Maximum Daily Loads

### J. Total Maximum Daily Loads

1. Section 402(p)(3)(B)(iii) of the Clean Water Action (CWA) states that municipal storm sewer system permits must require stormwater controls to reduce the discharge of pollutants to the MEP. By regulation at 40 CFR§122.44, EPA further requires that BMPs and programs implemented pursuant to this permit must be consistent with applicable WLAs developed under EPA approved TMDLs. The overall goals of Maryland's NPDES municipal stormwater permit program are to control stormwater pollutant discharges by implementing the BMPs and programs required by this permit, show progress toward meeting WLAs developed under EPA approved TMDLs, and contribute to the attainment of water quality standards according to the CWA.

In order to accomplish these goals, this permit requires in Part III.J.2. below, that the County develop TMDL implementation plans that include estimates of pollutant loading reductions (benchmarks) to be achieved by specific deadlines and describe those actions necessary to meet the storm drain system's share of WLAs in EPA approved TMDLs. These implementation plans may be in addition or complementary to the watershed assessments required in PART III.F. above and include ongoing watershed restoration efforts required in this permit, as appropriate. Implementation plan benchmarks shall be based on data available to and generated by the County and used as interim goals for guiding adaptive management activities. All EPA approved TMDL's that establish WLA's applicable to the County's storm drain system are incorporated by reference into this permit.

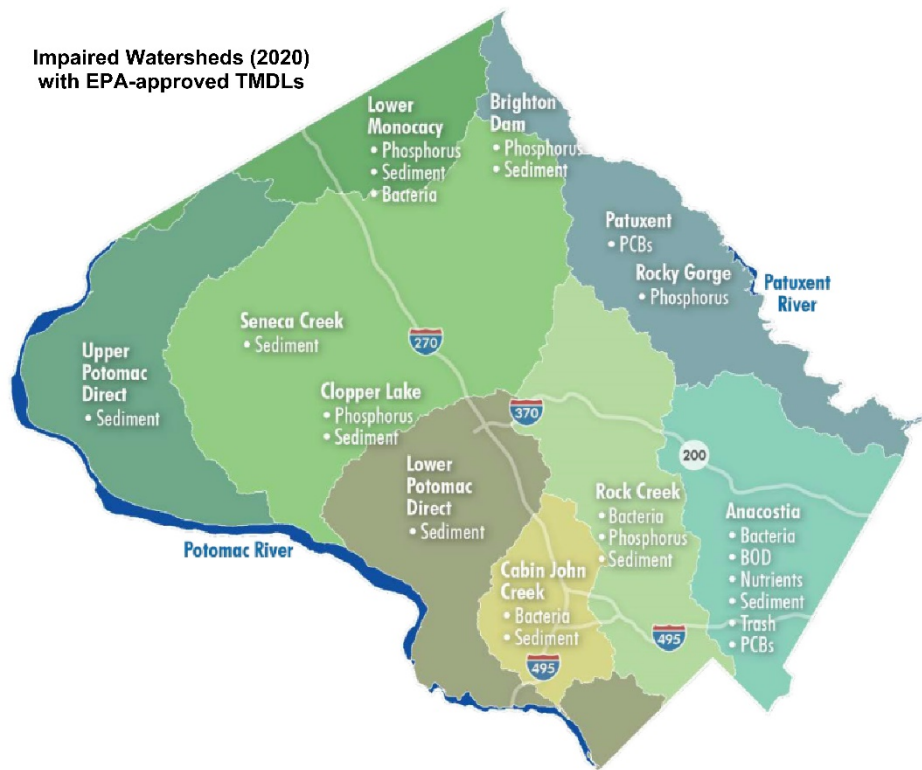
2. Within one year of the effective date of this permit or the approval of an applicable TMDL by EPA, whichever is later, the County shall submit to MDE for review and approval a TMDL implementation plan for each EPA approved TMDLs for a watershed or portion of a watershed covered by this permit. The implementation plans shall include:
  - a. The actions and deadlines by which those actions must be taken to meet the required pollutant load reduction benchmarks and WLAs within the specified time frame;
  - b. A description of how ongoing watershed restoration efforts will be modified to address any applicable WLAs;
  - c. A schedule and cost estimate to implement the complete watershed restoration efforts necessary to meet established WLA benchmarks;
  - d. A description of a plan that will be used when benchmarks are not met and projected funding is inadequate;
  - e. A public participation component that includes:
    - i. Notice in a local newspaper and the County's web site outlining how the public may obtain information and provide comments to the County regarding implementation plans;
    - ii. Procedures for providing the plan to interested parties upon request;
    - iii. A minimum 30-day comment period; and

- iv. A summary in the next annual report of how the County addressed or will address any material public comments received.
3. As reflected in PART III.H. above, the assessment to determine whether the conditions of this permit are satisfied, the MEP standard is reached, and whether progress toward meeting applicable WLAs is realized is critical. Therefore, complete and accurate annual reporting, pursuant to PART IV of this permit is required to allow for regulatory review of the permittee's stormwater management program and continued assessment of waters of the state.
4. If EPA approved TMDL WLAs are not being met according to the benchmarks and deadlines contained in the County's TMDL implementation plans, an iterative approach shall be used where additional or alternative stormwater controls are proposed and implemented in order to achieve WLAs. The permittee shall evaluate and document progress toward meeting TMDL requirements within the jurisdiction on an annual basis. This assessment shall describe specific actions undertaken pursuant to the permit and if necessary, how these actions will be modified, and the deadlines by which they will be modified to achieve compliance with EPA approved TMDLs. This assessment shall include complete descriptions of the analytical methodology used to evaluate the effectiveness of restoration efforts; include summaries of monitoring data, descriptions of statistical analysis and/or other modeling approaches used to evaluate the data, and GIS data; and a detailed description of sampling protocols.
5. MDE shall review the annual assessment and any proposed modifications to the TMDL implementation plan and approve the modifications, if they are adequate.

The Permit requires developing implementation plans to meet County MS4 wasteload allocations (WLAs) for any U.S. Environmental Protection Agency (EPA)-approved total maximum daily load (TMDL) in County watersheds within 1 year of EPA approval. The County must also report progress towards meeting those WLAs where watershed restoration is occurring.

## J.1 TMDL Implementation Plans

The County successfully submitted the *Montgomery County Coordinated Implementation Strategy* (Strategy), as required by the Permit, including meeting the TMDL WLAs, in February 2011, 1 year after the Permit was issued. The Strategy used the watershed treatment model (WTM) to verify pollutant baseline loads in TMDL watersheds and estimate pollutant load reductions of a variety of completed and planned structural, nonstructural, and programmatic watershed restoration practices. Pollutant load reduction efficiencies were selected based on the best information available during model development. The model estimated pollutant treatment by stormwater management best management practices (BMPs) and retrofits constructed after TMDL baseline years. Details on the WTM assumptions can be found in the Appendix B, Strategy, and Appendix K, Modeling Framework. Figure III.J.1 shows those watersheds with MDE-identified impairments and EPA-approved TMDLs as of August 2020.



**Figure III.J.1. County Watersheds with Impairments and EPA-Approved TMDLs**

## J.2 TMDLs Issued Since June 2009

Table III.J.1 shows the EPA-approved TMDLs for Montgomery County with the status of their implementation plans. The Strategy addressed all existing TMDLs as of September 2009. Individual implementation plans were developed for TMDLs approved after 2009. A TMDL for polychlorinated biphenyls (PCBs) in the Patuxent River was approved by EPA in September 2017, and the draft implementation plan was included as Appendix I in the FY18 Annual Report on February 15, 2019.

## J.3 Progress Towards Meeting WLAs for EPA Approved TMDLs

Table III.J.2 summarizes watershed-specific TMDLs and pollutant reductions achieved by watershed restoration projects constructed after each TMDL's baseline data date. The reductions include nutrient and sediment reductions from stream restoration projects using efficiencies provided in MDE's *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* (August 2014). The FY20 pollutant-load reduction information can also be found in Appendix A, Tables G and G.1.



**Table III.J.1. Status of TMDLs Implementation Plan**

<b>Watershed</b>	<b>TMDL</b>	<b>Status of Implementation Plan</b>
Anacostia River	PCBs	Implementation Plan submitted in 2013
	Nitrogen	Required reductions shown in Strategy
	Phosphorus	Required reductions shown in Strategy
	BOD	Required reductions shown in Strategy
	Sediment	Required reductions shown in Strategy
	Bacteria	Required reductions shown in Strategy
	Trash	Required reductions shown in Strategy
Cabin John Creek	Sediment	Required reductions shown in Strategy
	Bacteria	Required reductions shown in Strategy
Lower Monocacy	Bacteria	Implementation Plan completed in 2014
	Phosphorous	Implementation Plan completed in 2014
	Sediment	Implementation Plan completed in 2014
Potomac River Direct	Sediment	Implementation Plan completed in 2014
Rock Creek	Sediment	Required reductions shown in Strategy
	Phosphorous	Required reductions shown in Strategy
	Bacteria	Required reductions shown in Strategy
Seneca Creek	Sediment	Implementation Plan completed in 2014
Clopper Lake	Phosphorous	Required reductions shown in Strategy
	Sediment	Required reductions shown in Strategy
Triadelphia Reservoir	Sediment	Required reductions shown in Strategy
	Phosphorous	Required reductions shown in Strategy
Rocky Gorge Reservoir	Phosphorous	Required reductions shown in Strategy
Patuxent River	PCBs	Draft Implementation Plan completed in 2014

MDE approved the County's PCB TMDL Implementation Plan for the Anacostia River as written and conditionally approved the County's other TMDL Implementation Plans on September 17, 2018. Plans other than the PCB TMDL Implementation Plan for the Anacostia River must be updated to include the following:

- Baseline load estimates and associated calculations, current progress load assessments, and projected implementation scenario load assessments
- Enumeration of specific planned implementation actions in an accounting format
- Compliance schedule indicating the end dates for achieving the total required load reductions and regular milestones before those end dates

The County will submit updated TMDL Implementation Plans to MDE by the end of the first year of the forthcoming MS4 Permit.

MDE provided comments on the County's PCB TMDL Implementation Plan for the Patuxent River on June 21, 2019. The TMDL was established in September 2017, and the implementation plan was submitted with the FY18 Annual Report. The County will respond to MDE's comments and submit an updated implementation plan by the end of the first year of the forthcoming MS4 permit.

The Strategy land cover loading rates and BMP reduction efficiencies were developed prior to the issuance of MDE's 2014 Accounting Guidance and, therefore, do not always match those efficiencies. In 2018, DEP began evaluating the Chesapeake Assessment Scenario Tool (CAST) model for local TMDL progress reporting. The complexity of land use categories included in CAST, and the fact that the model only simulates nitrogen, phosphorus, and sediment loads, make it less than ideal for tracking progress towards local TMDLs. The County is exploring simpler spreadsheet-tool approaches that would use the land use loading rates and BMP efficiencies found in CAST. MDE also indicated in their September 17, 2018 letter that they will provide an updated load-accounting framework based on loading rates and BMP efficiencies found in CAST. The DEP will work with MDE to ensure that data are accurately captured and explained in future annual reports.

## J.4 Chesapeake Bay TMDL

Information on the Chesapeake Bay TMDL is presented in Part V, Special Programmatic Conditions, A. Tributary Strategy.

Table III.J.2. TMDL Summary by Impairment									
Impairment	Watershed	Issue Date	Pollutant	County MS4 Baseline Load	Annual Allocation	Units	WLASw Reduction (percent)	Reduction Since Baseline Date (percent) <sup>a</sup>	TMDL Baseline Data Date
Bacteria	Cabin John Creek	2007c	E. coli	44,257	30,670	(billion MPN/yr)	30.7	5.82	2003
	Rock Creek	2007d	Enterococci	453,669	18,195	(billion MPN/yr)	96.0	4.91	2003
	Anacostia River	2007b	Enterococci	247,809	29,978	(billion MPN/yr)	87.9	7.80	2003
	Lower Monocacy River	2009e	E. coli	67,452	9,848	(billion MPN/yr)	85.4	1.30	2003-2004
Sediment	Anacostia River	2007a	TSS	7,682	1,101	(tons/yr)	85.7	27.86	1997
	Triadelphia Reservoir	2008b	TSS	29	29	(tons/yr)	0.0	0.02	2003
	Clopper Lake	2002	TSS	13	13	(tons/yr)	0.0	0.00	2002
	Lower Monocacy River	2009d	TSS	253	99	(tons/yr)	60.8	1.20	2000
	Seneca Creek	2011	TSS	5,735	3,185	(tons/yr)	44.6	28.12	2005
	Rock Creek	2011	TSS	8,667	5,345	(tons/yr)	38.3	11.65	2005
	Cabin John Creek	2011	TSS	3,143	2,430	(tons/yr)	22.7	5.58	2005
	Potomac River Direct	2011	TSS	4,365	2,783	(tons/yr)	36.2	17.37	2005
Nutrients	Clopper Lake	2002	Phosphorus	101	55	(lbs/yr)	45.4	0.00	2002
	Anacostia River	2008a	Nitrogen	206,312	38,959	(lbs/yr)	81.8	10.35	1997
	Anacostia River	2008a	Phosphorus	20,953	3,947	(lbs/yr)	81.2	38.46	1997
	Triadelphia Reservoir	2008b	Phosphorus	438	373	(lbs/yr)	15.0	0.30	2003
	Rocky Gorge Reservoir	2008b	Phosphorus	4,268	3,628	(lbs/yr)	15.0	6.10	2003
	Lower Monocacy River	2013	Phosphorus	1,872	1,305	(lbs/yr)	30.0	0.20	2009
	Rock Creek	2013	Phosphorus	12,503	8,089	(lbs/yr)	35.0	8.99	2009
Trash	Anacostia River	2010	Trash	228,683	-	lbs/yr removed	100.0	6.77	2010

Table III.J.2. TMDL Summary by Impairment									
Impairment	Watershed	Issue Date	Pollutant	County MS4 Baseline Load	Annual Allocation	Units	WLASw Reduction (percent)	Reduction Since Baseline Date (percent) <sup>a</sup>	TMDL Baseline Data Date
PCBs	Anacostia River- nontidal – Northwest Branch	2011	PCBs	134.5 <sup>b</sup>	2.56	g/yr	98.1	0.0	2005
	Anacostia River- nontidal – Northeast Branch	2011	PCBs	112.57 <sup>b</sup>	1.53	g/yr	98.6	0.0	2005
	Patuxent River	2017	PCBs	32.2	0.00	g/yr	99.9	0.0	2010

Source: (MDE 2013) 2010 Status of Approved Stormwater Wasteload Allocations for NPDES Regulated Stormwater Entities in Montgomery County, April 27, 2010 by Jeff White, MDE, and additional email 11/13/13.

<sup>a</sup> Percent reduction of pollutant by BMPs completed after the TMDL baseline data collection period, as of FY20.

<sup>b</sup> For all known NPDES stormwater discharges in the County portions of the Northeast and the Northwest Branches, as identified in the TMDL.

billion MPN/yr = billion most probable number per year

g/yr = grams per year

lbs/yr = pounds per year

tons/yr = tons per year

WLASw = waste load allocation stormwater

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## IV. Program Review, Annual Reporting, and Reapplication

### A. Annual Reporting

Annual progress reports, required under 40 CFR 122.42(c), will facilitate the long-term assessment of Montgomery County's NPDES stormwater program. The County shall submit annual reports on or before the anniversary date of this permit, February 15.

### B. Program Review Reapplication for NPDES Stormwater Discharge Permit

MDE will review program implementation, annual reports, and periodic data submittal on an annual basis.

### C. Reapplication for NPDES Stormwater Discharge Permit

This permit is intended to continue in effect for no more than 5 years. Continuation or reissuance of this permit beyond this permit term will require the County to reapply for NPDES stormwater discharge permit coverage in its fourth year annual report. Failure to reapply for coverage constitutes a violation of this permit.

As part of this application process, Montgomery County shall submit to MDE an executive summary of its NPDES stormwater management program that specifically describes how the County is meeting the overall goal to ensure that each County watershed has been thoroughly evaluated and its progress in implementing water quality improvements to the MEP. This application shall be used to gauge the effectiveness of the County's NPDES stormwater program and will provide guidance for developing future permit conditions. At a minimum, the application summary shall include:

1. Montgomery County's NPDES stormwater program goals
2. Program summaries for the permit term regarding:
  - a. Illicit connection detection and elimination results
  - b. Watershed restoration status including County totals for impervious acres, impervious acres controlled by stormwater management, the current status of watershed restoration projects and acres managed, and documentation of progress towards meeting WLA's developed under EPA-approved TMDLs as of the date of issuance of the permit.
  - c. Pollutant load reductions as a result of this permit and an evaluation of whether TMDLs are being achieved.
  - d. Other relevant data and information for describing County programs.
3. Program Operation and capital improvement costs for the permit term
4. Descriptions of any proposed permit conditions changes based on analyses of the successes and failures of the County's efforts to comply with the conditions of this Permit.

## A Annual Reporting

County DEP's submission of this FY20 Annual Report to the MDE fulfills the annual progress report requirement as specified in Part IV of the MS4 Permit Number 06-DP-3320 MD0068349. The County is submitting its 11th report in this current permit cycle (February 16, 2010 through February 15, 2015).

## B Program Review Reapplication for NPDES Stormwater Discharge Permit

MDE reviews program implementation, annual reports, and periodic data submittals annually. MDE also reviewed the County's FY19 MS4 Annual Report on June 18, 2020. The County has reviewed the comments and addressed them in this submission.

## C Reapplication for NPDES Stormwater Discharge Permit

The MS4 Permit required the County to reapply for NPDES stormwater discharge permit coverage through its fourth-year annual report for the current Permit term. To fulfill that requirement, the County submitted its FY13 MS4 Annual Report in March 2014; the Permit reapplication was included as Part IV.C of that submittal.

On April 13, 2018, the County and MDE entered into a Consent Decree (CD). Section II, Corrective Actions, of the CD required the County to reapply for Permit coverage through its FY18 MS4 Annual Report; the County met this requirement and submitted the report to MDE by the February 15, 2019 deadline.

## V. Special Programmatic Conditions

### A. Tributary Strategies

With the renewal of the Chesapeake Bay Agreement in 2000, Maryland, along with Virginia, Pennsylvania, the District of Columbia, and the Chesapeake Bay Commission, continues to reduce the discharge of nutrients and sediments to Chesapeake Bay. Montgomery County lies predominantly within two of Maryland's ten major Chesapeake Bay tributary basins: The Middle Potomac and Patuxent River tributary basins. This NPDES permit encourages Montgomery County to assist with the implementation of the Tributary Strategy designed to meet the nutrient and sediment reduction goals of these tributaries.

### B. Comprehensive Planning

The County shall cooperate with the Maryland National Capital Park and Planning Commission (Commission) during the development and completion of the Water Resources Element (WRE) of the Commission's comprehensive land planning process as required by the Maryland Economic Growth, Resource Protection and Planning Act of 1992 (Article 66B, Annotated Code of Maryland). Such cooperation shall entail all reasonable actions authorized by law and not restricted by the Maryland-Washington Regional District Act (Article 28, Section 7-101 through 7-121.1, Annotated Code of Maryland), including but not limited to reviewing and approving the plans prepared and presented to it by the Commission, appropriating funds, and guiding the work of the Commission by instructing it to include certain tasks within its action plan.

## A. Tributary Strategy

During spring 2018, MDE reviewed Maryland's draft planning targets for the state's major river basins. These new planning targets were based on a refined Bay Watershed Model, which uses the most up-to-date land use, land cover, and monitoring data available. The state used the refined model to develop estimates about where it is with respect to statewide and basin-level 2025 watershed implementation plan (WIP) goals. These estimates determined that, although Maryland has achieved its Phase III WIP planning target for phosphorus, more work is needed to achieve further reductions in nitrogen.

MDE and other state partners, including Maryland Department of Agriculture (MDA), held five regional Phase III WIP meetings to inform and receive feedback from stakeholders. The agenda featured progress, funding and lessons learned, along with opportunities to ask questions and give opinions on the proposed Phase III WIP approach. MDE and MDA work with stakeholders to build local goals into the WIP, and refine, adapt, and adjust local plans. After revising the WIP based on information gathered through the regional meetings, the state made the Draft Phase III WIP available for public comment beginning April 12, 2019 through June 7, 2019. Strategies for the County's urban and septic sectors outlined in the draft WIP were consistent with the County's own MS4 Financial Assurance Plan for meeting current Phase I MS4 permit requirements: a 2025 nitrogen reduction goal of 581 pounds for the urban sector and 2,390 pounds for the septic sector.

After the public comment period ended, MDE revised the draft WIP and submitted its Final Phase III WIP to EPA on August 23, 2019; this submittal revised the County's 2025 nitrogen reduction goal to 10,312 pounds for urban sectors and 3,909 pounds for septic sectors. The County is unclear about why

these sector reduction goals increased while the strategies remained the same, but changes made in the Phase 6 model requiring in-stream pollutant loads to be distributed to upland load sources could be the explanation.

What did become clear during FY20 is MDE's intention to maintain restoration progress in the stormwater sector through its MS4 requirements over current and future permit cycles. Based on recent MS4 implementation success, MDE believes Phase I MS4 permittees in Maryland (nine counties, Baltimore City, and the Maryland State Highway Administration) can annually restore 2 percent of their impervious surface areas that currently have little or no stormwater treatment. While this implementation level will be used in the Phase III WIP analysis for estimating load reductions, MDE will continue to work with each permittee on an maximum extent practicable analysis to indicate what is feasible.

## B. Comprehensive Planning

County agencies routinely review and comment on the Maryland National Capital Park and Planning Commission Sector Plan and Master Plan as they are being developed.

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